COLLINS

overhaul manual

Collins Radio Company | Cedar Rapids, Iowa

Don Thomas
[illegible] N. 5th - P. O. Box [illegible]
McALLEN, TEXAS [illegible]

562R-1

Roll Steering Computer

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INFORMATION NEEDED:

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(C) Date placed in service
(D) Number of hours of service
(E) Nature of trouble
(F) Cause of trouble if known
(G) Part number (9 or 10 digit number) and name of part thought to be causing trouble
(H) Item or symbol number of same obtained from parts list or schematic
(I) Collins number (and name) of unit subassemblies involved in trouble
(J) Remarks

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INFORMATION NEEDED:

(A) Quantity required
(B) Collins part number (9 or 10 digit number) and description
(C) Item or symbol number obtained from parts list or schematic
(D) Collins type number, name and serial number of principal equipment
(E) Unit subassembly number (where applicable)

15 March 1965

Don Thomas
817 N. 5th - P. O. Box 1857
McALLEN, TEXAS 78501

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562R-1
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MANUAL

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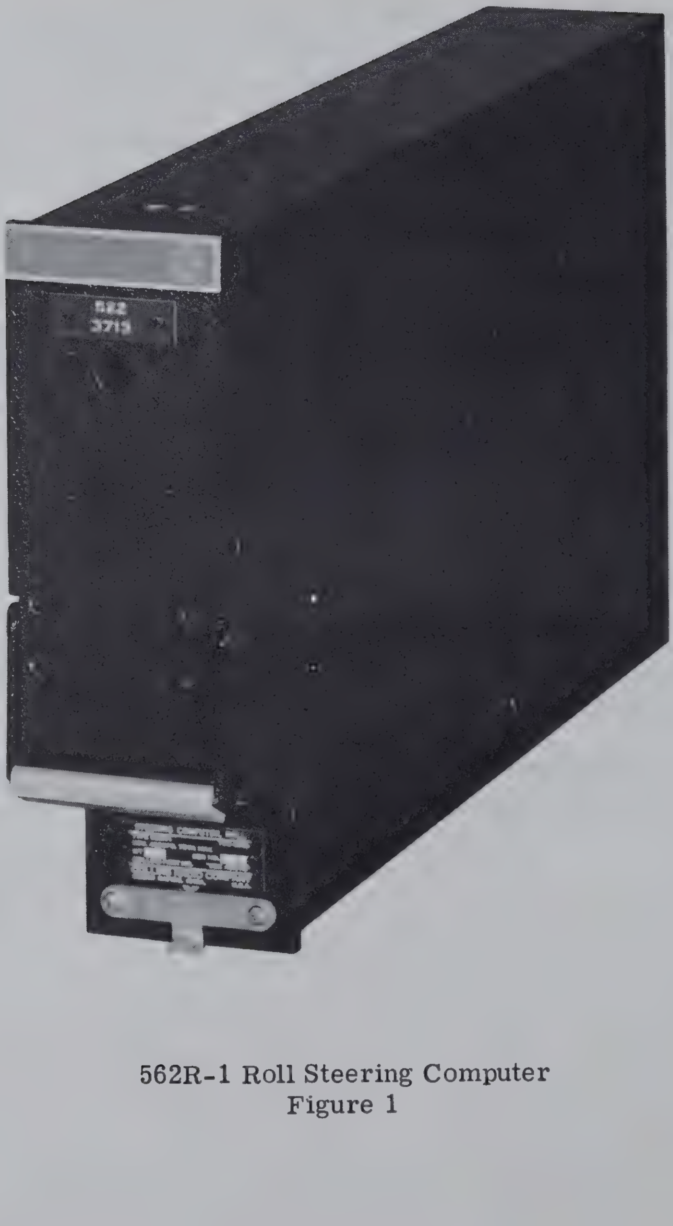

562R-1 Roll Steering Computer
Figure 1

562R-1 Roll Steering Computer - Description and Operation

1. INTRODUCTION.

This section provides description and operation information for the 562R-1 Roll Steering Computer (figure 1). This information includes purpose, specifications, functional description, and theory of operation to familiarize the user with the equipment. The following is a list of equipment covered by this manual.

2. PURPOSE OF EQUIPMENT.

The 562R-1 Roll Steering Computer is part of the Collins FD-109 Integrated Flight System. It provides a horizontal guidance signal which is presented on the roll steering display to inform the pilot of the necessary corrective measures to approach and/or hold a selected heading or flight path.

3. EQUIPMENT SPECIFICATIONS.

Equipment specifications for the 562R-1 Roll Steering Computer are presented in figure 2.

EQUIPMENT	DESCRIPTION	COLLINS PART NUMBER
562R-1	Roll Steering Computer	522-3713-001 522-3713-003 522-3715-005 522-3713-006 522-3713-007 522-3713-008 522-3713-011 522-3713-012 522-3713-015 522-3713-017 522-3713-018 522-3713-021

Table of Equipment Covered
Figure 1A

CHARACTERISTIC	SPECIFICATION
Specification	Meets requirements of FAA TSO C52 and ARINC Specification No. 404.
Mechanical characteristics	
Size	Short 1/4 ATR case.
Weight	8.5 pounds maximum.
Mounting	Short 1/4 ATR shockmount or an aircraft equipment rack conforming to ARINC Specification No. 404.
Service conditions	
Ambient temperature range: heated areas (temperature controlled)	
Continuous operation	-30° to +55°C (-22° to +131°F).
Storage	-65° to +70°C (-85° to +158°F).

Equipment Specifications (Sheet 1 of 4)
Figure 2

<table>
<tr><th>CHARACTERISTIC</th><th>SPECIFICATION</th></tr>
<tr><td>Ambient humidity range</td><td>0 to 95% at 32°C (+90°F).</td></tr>
<tr><td>Altitude</td><td>-1000 to 40,000 feet; unit will not be damaged by an absolute pressure equivalent to 50 inches of mercury.</td></tr>
<tr><td>Vibration</td><td><table>
<tr><th>Frequency</th><th>Displacement</th><th>Max Accel</th></tr>
<tr><td>5-55 cps</td><td>0.02 inch da</td><td></td></tr>
<tr><td>55-160 cps</td><td></td><td>±0.25 g</td></tr>
<tr><td>160-400 cps</td><td>0.00019 inch da</td><td></td></tr>
<tr><td>400-500 cps</td><td></td><td>±1.4 g</td></tr>
<tr><td>500-1000 cps</td><td></td><td>±0.3 g</td></tr>
</table></td></tr>
<tr><td>Electrical characteristics</td><td></td></tr>
<tr><td>Power inputs</td><td></td></tr>
<tr><td>Attitude power</td><td>26 volts, 400 cps.</td></tr>
<tr><td>Heading power</td><td>115 volts, 400 cps.</td></tr>
<tr><td>Command power</td><td>26 volts, 400 cps.</td></tr>
<tr><td>Flag and annunicator power</td><td>+28 volts dc, 28 watts maximum.</td></tr>
<tr><td>Power output</td><td></td></tr>
<tr><td>Heading power</td><td>26 volts, 400 cps, 7 volt-amperes maximum.</td></tr>
<tr><td>Signal inputs</td><td></td></tr>
<tr><td>Radio deviation signal</td><td>Reversible dc signal originating in the navigation receiver.</td></tr>
<tr><td>Selected heading signal</td><td>400-cps error voltage from the selected heading synchro control transformer in the course indicator. The 562R-1 is designed to operate with input signals of 240 to 465 millivolts per degree with a phase angle of 0 degree or with a signal of equivalent amplitude with a phase angle up to 30 degrees.</td></tr>
</table>

Equipment Specifications (Sheet 2 of 4)
Figure 2

CHARACTERISTIC	SPECIFICATION
Course datum signal	400-cps error voltage from a synchro control transformer attached to the course selector knob of the course indicator. The 562R-1 is designed to operate with input signals of 240 to 465 millivolts per degree with a phase angle of 0 degree or with a signal of equivalent amplitude with a phase angle up to 30 degrees.
Roll data (bank) signal	Reversible-phase 400-cps signal originating in the vertical gyro. The 562R-1 is designed to operate with an input signal of 130 to 280 millivolts per degree of bank with a phase angle of 0 degree or with a signal of equivalent amplitude with a phase angle up to 30 degrees.
Monitor inputs	
Gyro monitor	Dc signal of 18 to 30 volts when vertical gyro is operating properly.
Compass monitor	Dc signal of 18 to 30 volts when compass is operating properly.
Navigation receiver monitor	Dc signal of 18 to 30 volts from the navigation receiver, monitored in VOR, localizer, and approach modes.
Pitch servo monitor	Dc signal of 18 to 30 volts monitored in all modes.
Pitch computer monitor	Dc signal of 18 to 30 volts indicating proper operation of pitch steering computer.
Signal outputs	
Roll steering servo	This output is a converter/servoamplifier designed to drive a servo-type command display in the 329B( ) series of instruments.
Roll steering	Reversible dc signal with a nominal output of 66 millivolts per degree of bank or adjustable as selected by logic unit strapping.

Equipment Specifications (Sheet 3 or 4)
Figure 2

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McALLEN, TEXAS 78501

CHARACTERISTIC	SPECIFICATION
Auxiliary roll steering	Reversible dc signal with a nominal output fixed at 66 millivolts per degree of bank.
Monitor outputs	
Steering flag	18 to 30 volts dc with a current capability of 100 milliamperes.
Steering flag ground	Dc ground with a current capability of 50 milliamperes.
Computer monitor ground	Dc ground with a current capability of 50 milliamperes.

Equipment Specifications (Sheet 4 of 4)
Figure 2

4. EQUIPMENT DESCRIPTION.

The roll steering computer may be interchanged between various types of aircraft without computer readjustments. Different signal analog and gain requirements may be met by use of plug-in logic modules which attach to the front of the roll steering computer. Each logic module has strapping connections for one type of aircraft. The specific module in use in the roll steering computer is identified by the number appearing in the window on the front of the unit. Steering commands may be tailored to individual aircraft capabilities or desired operational limits by strapping of the logic module. Terminal board locations are shown in figure 3.

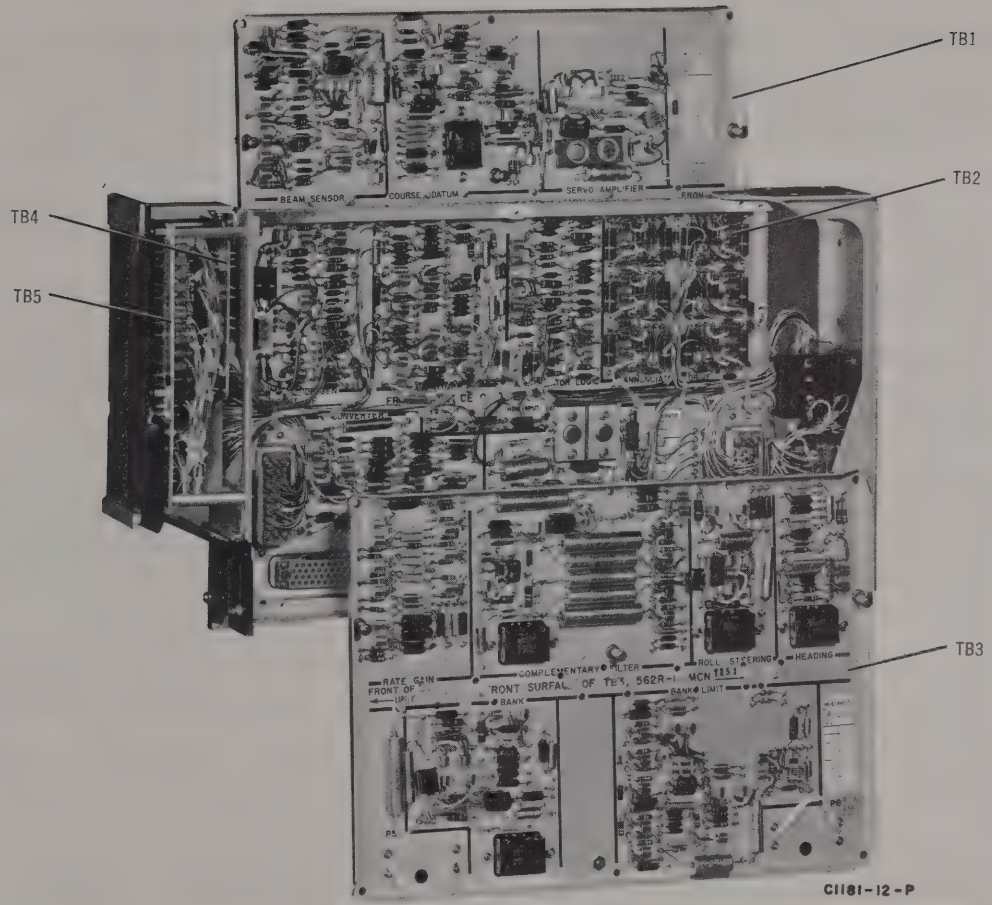
The roll steering computer is packaged in a short 1/4 ATR case (2.25 inches wide, 14.75 inches long, 7.625 inches high) and may be mounted in a standard short 1/4 ATR shockmount or in an aircraft equipment rack which conforms to ARINC Specification No. 404. Internal construction of the unit is of metal terminal boards with Teflon insulated terminals.

The roll steering computer should be installed in a heated, pressurized area. Connecting cables should be just long enough to allow for proper maintenance procedures. The main chassis connector is a Cannon type DPX 2-57P-57P-34B-0210, and the mating aircraft connector is a Cannon type DPX 2-57S-57S-33B-0210. Forced air cooling is not required.

5. THEORY OF OPERATION.

A. General.

Lateral steering information for the FD-109 Integrated Flight System is computed in the 562R-1 Roll Steering Computer. Operation of the 562R-1 for each of its modes is discussed in paragraph 5.B. Functional block diagram theory is given in paragraph 5.C. Detailed circuit theory is presented in paragraph 5.D.


TB1
TB2
TB4
TB5
TB3
BEAM SENSOR
COURSE DATUM
SERVO AMPLIFIER
RATE GAIN
COMPLEMENTARY FILTER
ROLL STEERING
HEADING
BANK
BANK LIMIT
C1181-12-P

562R-1 Terminal Board Locations
Figure 3

B. Simplified Theory of Operation.

(1) General.

The following computing functions are available in the roll steering computer. Their use in a particular system is dependent upon the strapping of the logic module being used.

(2) Off Mode.

In the off mode of operation, the steering flag output monitors only pitch and roll servo-operation. The dc steering signals provide no useful information in this mode. The steering servosignals provide zero command during this mode.

(3) Heading Mode.

In the heading mode of operation, the roll steering computer furnishes computed lateral steering information necessary to capture and maintain a selected heading.

The roll steering computer uses the selected heading error signal and the bank signal to compute the lateral steering signal. The heading error signal is amplified and limited to provide a bank command signal. The bank command signal and the bank signal are combined and amplified to produce a dc lateral steering signal.

The steering flag output monitors attitude and heading power, gyro and compass systems, the pitch computer monitor, and the roll and pitch steering servodisplay.

(4) VOR Mode.

In the VOR mode of operation, the roll steering signal furnishes computed lateral steering information necessary to capture and maintain a selected VOR course. The beam sensor capture level is adjusted by logic module strapping.

The roll steering computer uses course datum, bank, and radio deviation signals. These signals are mixed in a complementary filter to provide a synthetic radio damping signal. The synthetic radio damping signal is limited and mixed with course datum to provide a bank command signal. The bank command signal and the bank signal are combined and amplified to produce a dc lateral steering signal.

The steering flag output monitors attitude and heading power, gyro and compass systems, the pitch computer monitor, the roll and pitch steering servodisplay, and the navigation receiver flag monitor.

(5) Localizer Mode.

In the localizer mode of operation, the roll steering computer furnishes computed lateral steering information necessary to capture and maintain a selected localizer course. The beam sensor capture level is adjusted by logic module strapping.

The roll steering signal uses the same signals in localizer mode as described for VOR mode. The operation is identical in both modes except that in localizer mode the gains and limits are set at different values for more nearly optimum performance in flying a localizer course.

The steering flag output is the same in localizer mode as it is in VOR mode.

(6) Approach Mode.

In the approach mode of operation, the roll steering computer furnishes computed lateral steering information necessary to maintain the selected localizer course during the final approach to the runway.

The roll steering computer uses course datum, bank, and radio deviation signals. The bank and course datum signals are mixed in the complementary filter to provide crosswind correction. The output of the complementary filter is combined with the radio deviation signal to provide proper damping. The sum of the two signals is amplified and limited to provide a bank command signal. The bank command signal is combined with the bank signal to provide a dc lateral steering signal. Operation in approach mode is similar to the track phase of localizer mode except that gains and limits are changed to provide optimum localizer operation during the final approach.

When flying in the low approach configuration, the glide-slope extension signal will further optimize localizer operation.

The steering flag output in approach mode provides the same monitoring functions as in localizer mode.

(7) External Steer Command Mode.

In the external steer command mode of operation, the roll steering computer can provide a wings-level mode for use during the time the pitch steering computer is in an external steer command mode. The steering flag monitors attitude and heading power, vertical gyro, servodisplays, and the pitch computer monitor.

(8) Out-of-View Option.

Optional strapping is available to allow the computer monitor circuits to drive the V-bars out of view during alarm conditions. The steering flag output in this option monitors only servooperation (pitch and roll) and computer power.

C. Functional Theory of Operation. (See figures 6 and 7).

(1) General.

The roll steering computer compares roll data with a computed roll command signal and provides a lateral steering output to the flight director indicator.

Depending upon the strapping of the logic module, the roll steering computer may be operated in a number of modes. The logic module is housed under the hinged cover on the front of the case. Strapping of the logic circuits in the logic module is done in the factory prior to shipping. Strapping of the analog and gain circuits of the logic module is performed prior to installation. Analog and gain strapping depends upon the input devices and the instruments used with the roll steering computer. This theory section will describe only the general operation of the roll steering computer. Operation of the specific roll steering computer must be determined by inspecting the strapping of the logic module and by referring to the schematic diagrams. The logic module being used may be identified by the number appearing in the window on the front of the case.

The roll steering computer contains a number of logic or switching circuits. On the block diagram these circuits are referred to as AND, OR, or NOT circuits. To understand the switching sequences in the roll steering computer, it is necessary to understand what inputs are necessary to have an output from each circuit. An AND circuit requires all inputs to be present before there is an output. An OR circuit requires at least one of the inputs to be present before there is an output. The roll steering computer uses positive logic, meaning that inputs and outputs are positive voltage when present and 0 volt when absent.

(2) Roll Steering Output.

The horizontal steering signal is formed by combining a computed roll command signal with a signal representing actual bank. The difference between these two signals is equal to the difference between the commanded bank signal and the actual bank signal.

In the output stage, the difference signal is amplified and a phase detection network converts it to dc. If the instrument amplifier is used to drive the command mechanism in the flight director indicator, the signal is applied to a load selection network in the logic module. The S/N section of TB5 in the logic module may be strapped to change the loading of the output stage to allow use of the roll steering computer with a variety of flight director indicators.

In most cases, the roll steering computer will drive the roll command mechanism in the flight director indicator. The dc signal from the phase detector is filtered to remove high frequency noise and applied to the chopper at the input to the CONVERTER section of TB2. It is then applied to a load selection network in the logic module. The DISPLAY block of TB4 in the logic module may be strapped to provide gain adjustments in the output stages of the roll steering computer. The signal is amplified, limited, and then mixed with position and rate feedback from the flight director indicator. If either out-of-view bias or off-mode voltage is present, the command signal is interrupted, and the position and rate feedback signals become the command signals. The signal is amplified and applied to a quadrature rejection network to remove the components of the signal voltage which are out of phase with the reference voltage. The roll command signal is amplified by the servoamplifier which drives the roll command motor in the flight director indicator.

(3) Heading Mode.

In the heading mode of operation, the roll steering computer provides computed lateral (roll) steering information necessary to capture and maintain a selected heading.

The roll steering computer uses the selected heading error signal and the bank (roll data) signal to compute a lateral steering signal. The selected heading error signal from the course indicator is an ac signal proportional to the difference between the true heading of the aircraft and the selected heading. It is applied to the roll steering computer through pins 23 and 33 of P1B. The analog of the selected heading signal is adjusted to make the signal compatible with the input circuits. This makes it possible to use the roll steering computer with a variety of course indicators, the analogs of which may differ.

The roll steering computer is designed to operate with selected heading input signal having voltage analogs of 240 to 465 millivolts per degree of heading error with phase angles of 0 degree. Signals of equivalent magnitude having phase angles of up to 30 degrees also may be used. Compensation for signals having analogs of greater than 240 mv/deg is made by strapping in the HDG MV 240+ block of TB5. If the voltage analog of the selected heading signal is 300 mv/deg, for example, the center terminal of the HDG MV 240+ block would be connected to terminal 60.

The selected heading signal is then applied to the quadrature rejection network of the HEADING section. The quadrature rejection network removes the signal components which are 90 degrees out of phase with the reference voltage.

The heading error signal is then applied to the BANK LIMIT section of TB3. This section limits the maximum amplitude of the applied signal to some preset level. The signal is then amplified and limited again with provisions for adjusting the time constant in approach mode. The command signal is then low passed to keep the signal clean and also to control the washout time. The signal is applied to a high-input impedance amplifier which does not load the input circuits in small signal conditions.

The roll data input from the vertical gyro is an ac signal proportional to the actual bank angle of the aircraft. It is applied to the roll steering computer through pins 30 and 20 of P1B. The phase of the roll data signal may differ from the phase of the ac voltages used in the roll steering computer; therefore, the roll data signal is phase converted to the phase of the roll channel voltages. The analog of the roll data signal is adjusted to make it compatible with the input circuitry. This is necessary because the roll steering computer may be used with a variety of vertical gyros, and the analogs of the signals applied by these instruments may differ.

The roll steering computer is designed to operate with input signals of 130 to 280 millivolts per degree of bank with phase angles of 0 degree or signals of equivalent magnitude with phase angles of up to 30 degrees. Modification of input signals having analogs greater than 130 mv/deg is accomplished by strapping in the logic module. If the effective voltage analog from the vertical gyro is 170 mv/deg, for example, terminal 40 in the BANK MV 130+ block of TB5 is connected to the center terminal. This converts the voltage analog from 130 + 40 = 170 mv/deg to 130 mv/deg. With no strapping, the voltage analog of the signal remains 130 mv/deg.

The roll data signal is amplified and combined with the bank command signal at the input to the ROLL STEERING section.

The combination of the bank command signal and the actual bank (roll data) signal produces a signal which is proportional to the difference between the actual and the command bank. The signal is applied to the output stages which were described in paragraph 5.C.(2).

(4) VOR Mode.

In the VOR mode of operation, the roll steering computer provides lateral steering information necessary to come to and maintain a selected VOR course.

The roll steering computer uses the course datum, bank (roll data), and radio deviation signals to compute the lateral steering signal. The course datum signal from the course indicator is an ac signal proportional to the difference between the selected course and the actual aircraft heading. It is applied to the input circuitry through pins 34 and 24 of P1B. The direct course datum signal is passed through a quadrature rejection network before being applied to an analog adjust network. The analog of the course datum signal is adjusted to make the roll steering computer circuitry compatible with the particular course indicator supplying the signal.

The roll steering computer is designed to operate with course datum input signals of 240 to 465 millivolts per degree and phase angles of 0 degree. It will also operate with signals of equivalent amplitude and phase angles up to 30 degrees. Strapping in the CD MV 240+ block of TB5 adjusts the input signal to match the circuit characteristics of the roll steering computer. If the voltage analog of the course datum input signal is

360 mv/deg, for example, terminal 120 of the CD MV 240+ block would be connected to terminal B3. The course datum signal is then amplified before being combined with the bank and radio deviation signals.

The radio deviation signal from the navigation receiver is a dc signal proportional to the angular displacement of the aircraft from the selected VOR course. It is applied to the roll steering computer through pins 32 and 22 of P1B. The dc signal is chopped to convert it to ac, amplified, and applied to the RADIO RATE LIMITER section. The limiting level is dependent upon whether localizer frequency mode voltage or track mode voltage is present. The limiting level also may be controlled by strapping in the RADIO LOGIC section of the logic module. The limited signal is low-pass filtered and then amplified. The amplified radio deviation signal goes in three directions. It is applied to the beam sensor which provides the necessary switching when all conditions are satisfied for VOR capture and to the complementary filter. The radio deviation signal is also combined with the complementary filter output before being amplified.

(a) Beam Sensor.

The rate-limited radio deviation signal is amplified and applied to a trip level or sensing level adjust circuit. The trip is controlled by strapping in the BS ADJUST section of TB4, and whether the aircraft is flying VOR or localizer mode. The deviation signal is amplified and applied to the input of the BEAM SENSOR section. The beam sensor is a latching type circuit which remains activated unless the off-course timer has run down.

The beam sensor is turned on when the aircraft approaches the center of the beam. If the beam sensor is on and nav flag voltage is present, indicating the navigation signal is reliable, the timer is started. If the aircraft is still on beam center after 90 seconds, a track signal is produced. VOR/localizer mode voltage, not track voltage, and the voltage necessary to start the timer will provide a ground, indicating the aircraft is on course. Track voltage or approach mode voltage indicates the same thing. If the aircraft stops tracking the beam center for more than 120 seconds, the timer removes the nav capture ground and the track signal. If the VOR/localizer mode voltage is removed (roll steering computer switched to another mode), the reset circuit causes the nav capture ground and the track voltage to be removed.

(b) Complementary Filter.

The COMPLEMENTARY FILTER section combines the radio deviation signal, the course datum rate signal, and the bank signal. The resulting signal is a pure radio rate signal if the signal gains are correct. This radio rate signal is called a synthetic rate signal and is mixed with the radio deviation signal to stabilize the approach to the selected VOR or localizer course and to provide automatic cross-wind correction.

The course datum rate signal is applied to the complementary filter from the CD 3.2 - rate adjustment block of TB5. The bank signal is applied from the BANK 1.2 - block of TB5, and the radio deviation signal is applied from the RADIO 30 - block. The terminals of the CD 3.2 - , BANK 1.2 - , and RADIO 30 - blocks are connected to the various mode terminals below the RATE FILTER section of TB5.

The gains of the course datum, bank, and radio signals are adjusted to predetermined values, and the signals are combined and applied to the complementary filter.

The complementary filter is essentially a bandpass filter, and the center frequency of the signals passed is dependent upon the presence of localizer frequency mode voltage and the 2 SEC voltage. In the VOR mode, neither voltage is present, and the time constant of the complementary filter is 8 seconds. In the localizer capture mode, the localizer frequency mode voltage is present because the navigation receiver is tuned to a localizer frequency. The localizer frequency voltage activates a section of the complementary filter which reduces the time constant of the filter to 4 seconds, increasing the center frequency of the filtered signal. If both the localizer frequency and 2 SEC voltages are applied to the complementary filter, the time constant is reduced to 2 seconds, and the center frequency of the filtered signal is further increased. The 2 SEC voltage is applied when a voltage is placed on the 2 SEC terminal of TB5. This depends upon the strapping of TB5, but normally the strapping is such that the 2 SEC section of the filter is activated when the roll steering computer is in the glide-slope extension phase of the localizer capture mode.

The complementary filter removes high-frequency components from the radio signal and differentiates the low-frequency components to form a rate signal. The bank signal, which is of higher frequency than the frequency of the complementary filter, is integrated to form a rate signal which is proportional to radio rate. The course datum signal is passed by the complementary filter with little or no attenuation and phase shift. Heading errors due to crosswind are dc signals and as such are 100 percent attenuated. This allows the aircraft to fly any heading without standoff and provides crosswind correction.

The combination of the integrated bank signal, course datum rate signal, and differentiated radio deviation signal is a pure radio rate (or synthetic radio rate) signal which is mixed with direct radio deviation.

(c) Course Cut Limiter.

The direct radio deviation signal and the synthetic radio rate are mixed, amplified, and applied to the COURSE CUT LIMITER section. If nav on course ground and VOR only mode voltage are not present, course datum is mixed directly with the radio deviation signal at the input to the COURSE CUT LIMITER section. The course cut limiter limits the intercept angle when the aircraft is flying a fixed-angle VOR capture course. If the aircraft is flying VOR only and the aircraft has captured the radio beam, or voltage is present (due to strapping) on the B/L terminal of the RADIO LOGIC block of TB5, the limiting level (controlled by a limit adjust network) is raised. If nav receiver off voltage is present at the NAV OFF terminal in the HDG LOGIC block of TB5, the signal will be grounded at the amplifier output. If the course datum is not applied to the input of the course cut limiter, its gain is reduced (depending upon the switching) and is applied to the BANK LIMIT section. The remaining portions of the roll command channel have been discussed previously.

(5) Mode Generators.

The mode switching in the roll steering computer occurs when all conditions are satisfied. For the roll steering computer to be in approach mode, either approach mode voltage may be applied at P1B-17 or glide-slope on mode voltage from the pitch steering computer and nav on course ground from the beam sensor are present. Localizer only mode voltage will be present if the roll steering computer is in VOR/localizer mode and not in approach mode, VOR only mode, or heading mode. The roll steering computer will be in VOR only mode if it is in VOR/localizer mode and not in heading mode, or if the navigation receiver is not tuned to a localizer frequency.

(6) Monitor Switching.

There are three outputs from the MONITOR section; the computer monitor ground, the steering flag ground, and the steering flag signal.

(a) Steering Flag.

The presence of steering flag voltage indicates proper computer power and servooperation. To have a proper steering flag indication, the steering flag ground and flag and annunicator voltage have to be present.

(b) Steering Flag Ground.

The steering flag ground will be present when a ground is present at terminal A of the OUT OF VIEW section of TB4 and a positive voltage is received from the previous stage. A positive voltage output will be received from the AND gate (2Q12) if both the pitch servomonitor voltage from the pitch steering computer is present and a ground is switched onto 2Q12 by the previous AND gate (2Q11). A ground will occur at the output of AND gate 2Q11 if 28 volts dc command power is present and either position Z feedback from the flight director indicator or a null input to the servoamplifier are present.

(c) Computer Monitor Ground.

The computer monitor ground contains the same information as the steering flag ground except that servooperation is not monitored. This signal is intended for use by external units, such as autopilots, which do not depend upon proper display servooperation. The computer monitor ground may be connected by logic module strapping to drive the out-of-view circuits.

The ground is present when all conditions are satisfied as follows: either off mode voltage or a positive voltage output from the preceding AND gate is present. This output will be available when pitch computer monitor voltage from the roll steering computer is present along with a positive voltage from AND gate 2Q9, 2Q10. The output from 2Q9, 2Q10 will be present when compass monitor or bank command off voltage is present, along with gyro high level flag and either VOR/localizer high level flag, synthetic localizer flag, VOR/localizer off, or bank command off voltages.

(7) Annunciators.

Annunciator signals are available in the form of dc voltages. Presence of a mode corresponds to +23 to +31 volts, with less than 3.5 volts when the roll steering computer is not in that mode. The annunciator signals are exclusive and override each other sequentially, except for VOR/localizer arm which will be present whenever the computer is ready to capture a radio beam. The order in which the annunciator signals will override each other is listed below.

Heading on

VOR/localizer capture

Approach on

Extension on

External steer command on

External steer command mode will override all other modes except off mode.

The presence of VOR/localizer arm signal will not affect whichever annunciator is on. It is possible to make the annunciators nonexclusive in a selectable manner by logic module strapping.

D. Detailed Circuit Theory.

(1) BANK Section.

The roll data signal from the vertical gyro is applied to pins 30 and 20 of connector P1B on the roll steering computer. The magnitude of the roll data signal is proportional to the bank angle of the aircraft, and the phase of the signal depends upon the direction of roll. The vertical gyro is energized with attitude phase power, and the roll steering computer is energized primarily with heading phase power. Because the phase of the attitude power may be different from that of the heading power, the roll data signal must be converted to heading phase to make it compatible with the other signals in the roll steering computer. If the roll data signal is not in phase with the heading phase power, some information from the roll data signal may be lost or the information may be misinterpreted.

The signal is supplied to the primary of T3 on TB3 with R131 providing an impedance match. The output of T3 is taken off the center of the secondary (terminal 4-5). Either terminal 3 or terminal 6 is connected to ground, depending upon the states of switches Q21 and Q22.

On the first half-cycle, when the 26 $\underline{\angle 0^\circ}$ volt ac attitude power source is positive with respect to ground, Q21 is cut off. The 26 $\underline{\angle 180^\circ}$ volt ac attitude power source is then negative with respect to ground, and Q22 is conducting. This applies a ground to terminal 3 of T3, and because of the phasing of T3, the output is in phase with the applied signal. On the second half-cycle, Q22 is cut off and Q21 conducts, grounding terminal 6 of T3. The output is then out of phase with the applied signal. The resulting output for the full cycle is pulsating dc. The average value of the output is proportional to the applied signal, and the polarity is directly related to the phase of the applied signal.

The pulsating dc is then converted to an ac signal having the same phase as the heading power supply. On the positive half-cycle of the $26 \angle 180^\circ$ volt ac heading power source, Q23 is cut off and Q24 conducts. This places a ground between C17 and C18. On the negative half-cycle, Q24 is cut off and Q23 conducts, placing a ground between R130 and C17. Assume that Q24 is conducting, C17 is then permitted to charge to the maximum average dc value, and the output of the stage is zero. As Q24 cuts off and Q23 begins to conduct, the collector-to-emitter resistance of Q22 drops, and C17 is placed across the output. If C17 was originally charged with a positive voltage, the output becomes more negative as C17 is placed across the output terminals. As Q23 cuts off, the collector voltage of Q23 increases, cancelling the remaining voltage on C17 and causing the output to return to zero. As Q24 begins to conduct, the collector-to-emitter resistance decreases. This permits C17 to charge and causes an increasing voltage to develop on the collector of Q24. As C17 becomes charged and Q24 cuts off, the collector voltage again drops to zero. The resulting output is a square-wave, 400-cps voltage with amplitude proportional to the average value of the applied pulsating dc voltage. Thus the phase converter has converted the attitude phase roll data signal to a heading phase signal.

The phase converted roll data signal is adjusted next for the proper voltage analog. Capacitors C18 and C20 serve to isolate the analog adjustment network from the associated circuits.

(2) Bank Input Amplifier.

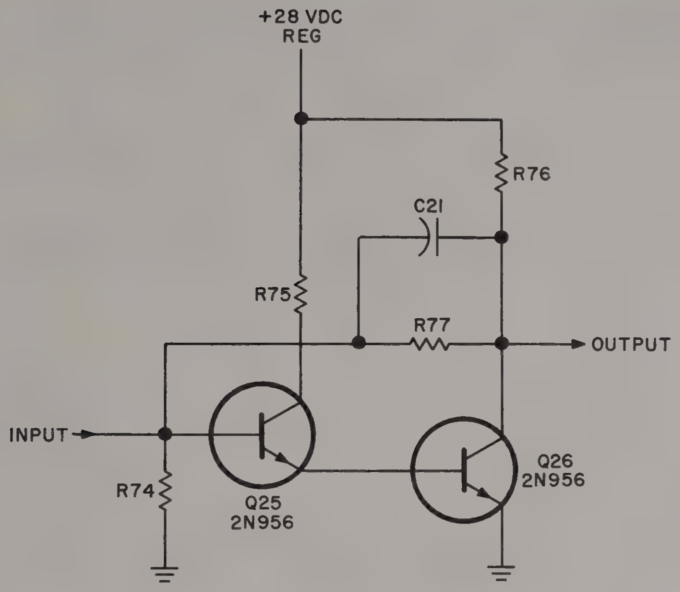
The roll data signal is applied to the input of the bank input amplifier (figure 4). The signal is developed across R74 and applied to the base of Q25. Q25 functions similarly to an emitter follower with the base-to-emitter resistance of Q25. An increase in base-emitter current in Q25 causes an increase in collector-emitter current. These two currents comprise the base current of Q26 causing a further increase in collector-emitter current in Q26. This reduces the collector voltage. R75 and R76 drop the +28 volts dc to approximately 14 volts dc for the proper operating point of the transistors. C21 and R77 provide an ac feedback path from the output to the input to give the amplifier stability. The output will be a 400-cps signal, phase shifted 180 degrees from the input signal.

The output of the bank input amplifier is supplied to the complementary filter RATE GAIN section. It is also coupled through C22 to the input of the roll steering output amplifier.

(3) HEADING Section.

(a) Heading Input.

The selected heading error input to the roll steering computer is an ac voltage proportional to the deviation of the aircraft from the selected heading. The phase of the signal depends upon the direction of deviation. It is taken from a synchro control transformer in the course indicator and applied to the roll steering computer through pins 33 and 23 of connector P1B.

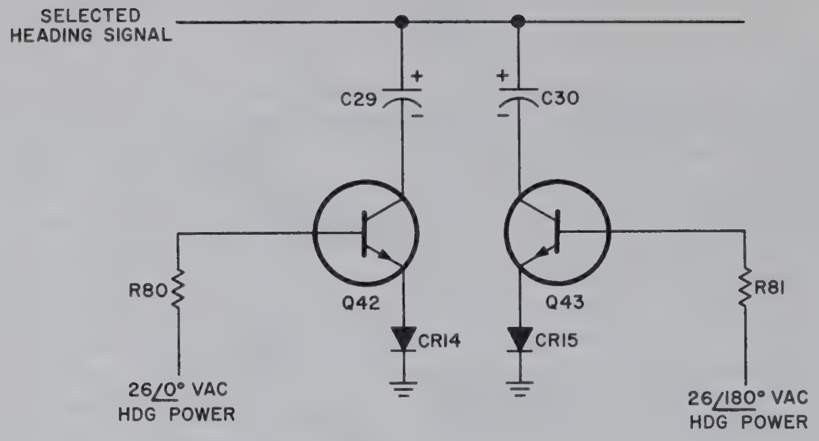


Bank Input Amplifier, Simplified Schematic Diagram
Figure 4

The selected heading error signal is applied to the primary of T4 with R85 providing impedance matching. In the heading mode of operation, a voltage is applied to terminal B4 of the HDG LOGIC block on TB5 of the logic module. If this terminal is strapped to the HDG ON terminal of the HDG LOGIC block, a positive voltage is applied through R87 to the base of Q27, biasing Q27 on. The T4 secondary circuit is closed to ground through Q27, and the selected heading signal is coupled through T4.

(b) Quadrature Rejection Network.

The selected heading error signal is applied to the BANK LIMIT section through a quadrature rejection network (figure 5). Q42 and Q43 are alternately switched on and off during half-cycles of heading phase power which is in phase with selected heading signal. When Q42 is on, C29 is placed between the signal path and ground. The in-phase part of the selected heading signal charges C29 to the maximum amplitude of the signal. The quadrature part of the pitch signal is 90 degrees out of phase with the in-phase part of the signal. During the first quarter-cycle the quadrature voltage charges C29 in one direction, and during the second quarter-cycle the quadrature voltages charges C29 in the opposite direction. The net result of this over one half-cycle is to eliminate the 90-degree components from the selected heading error signal. During the second half-cycle, Q43 is on, and C30 acts to eliminate the quadrature voltage and produce a square wave from the applied sine wave. The resulting signal is a series of positive and negative square waves which are in phase with the selected heading error signal.



Quadrature Rejection Network,
Simplified Schematic Diagram
Figure 5

The analog of the selected heading error signal is adjusted for the specific type of course indicator by analog adjustment network R90 through R93. The signal is coupled through C24 to the BANK LIMIT section.

(4) COURSE DATUM Section.

The course datum signal is applied to the roll steering computer from a synchro control transformer in the course indicator. The magnitude of the ac signal is proportional to the deviation of the aircraft heading from the selected VOR course, and the phase of the signal depends upon the direction of deviation. The course datum signal is applied to the roll steering computer through pins 34 and 24 of P1B.

The course datum signal is coupled through T2 of TB1 to a quadrature rejection network with R25 providing impedance matching. The signal is passed through the quadrature rejection network which removes the components which are 90 degrees out of phase with the heading power source. The operation of the quadrature rejection network is the same as that described in paragraph 5.D.(3)(b).

The analog of the course datum signal is controlled by the analog adjust network R28 through R31 depending upon strapping in the CD MV 240+ block of TB5 in the logic module. The adjusted course datum signal is coupled through C7 to amplifier Q11-Q12. The operation of this amplifier is the same as that described for the bank input amplifier in paragraph 5.D.(2). The course datum signal is supplied to the complementary filter RATE GAIN section.

The signal is also coupled through C14 and C15 to the input of the course cut limiter if the roll steering computer is not in VOR only and has not captured the VOR beam. If the roll steering computer is in VOR only and nav capture ground is present, Q17 will become saturated, placing a ground between C14 and C15. The course datum signal is also applied to the input of the BANK LIMIT section through the parallel combination of R128, R129, R41, and R55. If the roll steering computer is in VOR only and track mode, a positive voltage is applied through R123, R48, and CR14 to the base of Q15, causing Q15 to saturate, placing a ground between R41 and R55. If the roll steering computer is not in track mode, a positive voltage is applied to Q16 through R46. This causes a ground to be placed between R48 and R123, preventing Q15 from being turned on by VOR only voltage. When Q15 is on, the resistance in the circuit becomes greater, therefore lowering the level of the course datum signal applied to the bank limiter. If a positive voltage is present at the NAV OFF terminal in the HDG LOGIC block of TB5, both Q15 and Q16 are on, grounding the course datum input signal to the bank limiter.

(5) RADIO Section.

The reversible polarity radio deviation signal is supplied to P1B, pins 32 and 22 of the roll steering computer from the navigation receiver. The magnitude is proportional to the angular displacement of the aircraft from the selected VOR or localizer course, and the polarity depends upon the direction of deviation from the course. The nominal gradient of the radio deviation signal is 60 millivolts per degree of aircraft displacement from beam center in the localizer mode and 15 millivolts per degree of aircraft displacement in the VOR mode.

The dc radio deviation signal is applied to series-shunt chopper Q18-Q19 on TB1 to convert the dc signal to ac for ease in amplification. The input to this chopper is on the emitters of the transistors giving what would seem to be an inverted connection. With the inverted connection, the collector-to-emitter voltage drop is much smaller for each transistor in saturation, also the reverse-bias current is a small fraction of the normal reverse-bias saturation current. Therefore, it is much easier to match the transistors and obtain an output accurately proportional to the input, even for very small input signals. The bases of Q18 and Q19 are alternately biased on by the heading phase power. The chopped output is taken across the collector and emitter of each transistor with C17 and C18 isolating the dc error signal from the output. With no radio signal applied, Q18 and Q19 will alternately produce half-cycle outputs of the same polarity and magnitude. The signal is coupled through C18 to T5. C19 on the secondary of T5 shunts high frequency noise to ground.

Because the transistor outputs are 180 degrees out of phase and the outputs are determined by the polarity of the radio deviation signal, the polarity of the input signal determines the phase of the chopper output signal.

The ac radio deviation signal is coupled through C20 to amplifier Q20-Q21. The operation of this amplifier is the same as the bank input amplifier described in paragraph 5.D.(2). The output of amplifier Q20-Q21 is coupled through C22 to high gain amplifier Q22-Q23. The operation of this amplifier is the same as amplifier Q20-Q21 except that the amount of feedback has been reduced to provide higher gain.

The output of the collector of Q23 is coupled through C26 to the radio rate limiter. A dc bias voltage is developed across the series combination of R73-R75 by the current from the +28 volt dc source through CR20-CR23 and CR21-CR22. Because diodes CR20, CR21, CR22, and CR23 are all conducting, the bias voltage developed across R73-R75 appears at the junction of CR20 and CR21 and determines the limiting level of the bridge. The ac signal coupled through C26 causes current to flow from the

+28-volt dc source through CR21. If the magnitude of the ac signal exceeds the limiting level voltage, CR20 becomes reverse biased and cuts off. During that time when CR20 is reverse biased, current from the +28-volt dc source through CR21 is held at a constant value.

The current through CR21 charges C29 on alternate half-cycles when Q27 is conducting. The rate of charging of C29 is dependent upon the magnitude of the current through CR21 with the maximum charging rate occurring when the current is at its limiting value. On the half-cycle, when Q26 is conducting, C29 is removed from the circuit. The diode bridge, CR20-CR23 and C29, acts as a current limiter to limit the radio deviation signal to the command sections.

The magnitude of the charging current is determined by the value of the resistance leg from the junction of CR22 and CR23 to ground. When the roll steering computer is operating in the VOR mode before tracking of the VOR beam, a not track signal from the beam sensor biases Q24 on, placing only R73 in the path from the junction of CR22-CR23 to ground. The relatively small value of R73 sets the limiting level at a low value. When the roll steering computer begins tracking VOR, the not track voltage from the beam sensor is removed. This places both R73 and R75 in the path from the diode bridge to ground and raises the limiting level of the bridge.

If the roll steering signal is in localizer mode, +28 volts dc is present at the base circuit of Q25, biasing it into saturation and placing R74 in parallel with R75. Before tracking of the localizer beam, Q24 is saturated and the limiting level is low. After tracking localizer, the parallel combination of R74 and R75 in series with R73 increases the limiting level to a value somewhat less than that in the VOR mode. The reduced limiting level in the localizer mode is necessary because of the increased sensitivity required when tracking localizer.

The limited radio deviation signal is applied to the gate of field-effect transistor Q28. Q28 has a very high input impedance, so C29 is not discharged appreciably by this circuit. The limited radio signal is amplified by Q28-Q29. A feedback from the collector of Q29 is applied to the base circuit of Q22 in the RADIO section to dampen the radio deviation signal. The limited radio signal is applied to the complementary filter, RATE GAIN section, the course cut limiter, and the beam sensor.

The level at which the beam sensor will indicate radio capture is controlled by Q30 and associated resistors. Normally a large resistor will be strapped between L and V terminals of the BS ADJ block of TB4 and another resistor strapped between terminal V and ground. A localizer mode voltage at the base of Q30 will cause Q30 to saturate and place a ground at the junction of R87 and the resistor strapped between V and L. When no localizer frequency voltage is present, the resistance to ground will be greater. This prevents the angle at which the aircraft can capture VOR from being as large as the localizer capture angle. The adjusted signal is amplified by Q31-Q32; operation of this amplifier is the same as that discussed for the bank input amplifier (paragraph 5.D.(2)).

The radio deviation signal is also applied to the course cut limiter through parallel resistors R111, R112, R124, and R125, and amplifier Q33-Q34. If localizer mode voltage is present, Q48 will saturate, placing a ground between R124 and R125, thereby reducing the level of the signal applied to the course cut limiter by a greater amount

The operation of amplifier Q33-Q34 is the same as that described for the bank input amplifier (paragraph 5.D.(2)).

(6) Beam Sensor.

As the center of the radio beam is approached, the signal coupled through C1 to the base of Q1 is gradually reduced toward zero. After the radio signal falls below a threshold level, Q1 cuts off due to the -5-volt dc base bias. The collector-to-ground voltage increases to a positive value, and C2 charges to this value. The voltage is applied to the base of Q2 through CR1, switching Q2 on if there is a nav flag voltage. If there is no nav flag voltage (unreliable radio signal or navigation receiver malfunction), the collector voltage from Q1 is shunted to Q3 through CR1 and CR2. This clamps the base of Q2 at a negative value, cuts off Q2, allows Q3 to conduct, and prevents the start of a sensing-timing cycle.

When Q2 is conducting, the collector voltage is reduced to ground potential. This cuts off Q3 and allows the start of the sensing-timing cycle.

During the positive half-cycles of the voltage across the secondary of T1, the diodes of bridge CR3-CR6 are conducting. This allows the voltage at the collector of Q2 (before Q2 is conducting) to charge C4. Therefore C4 is fully charged before the aircraft approaches the center of the radio beam. The voltage resulting at the base of Q5 is amplified by Q5-Q6 and applied to the base of Q7, forcing Q7 into conduction. With Q7 conducting, a ground is placed on the anode of CR10. Also, before approaching the center of the radio beam, Q3 is conducting; therefore a ground has been placed at the anode of CR11. Unless the roll steering computer has been switched to approach mode, Q10 is not conducting. If a positive voltage is applied to the base of Q10, a ground is present indicating capture of the radio beam.

When Q2 was switched on, the charging voltage was removed from C4, leaving C4 fully charged. C4 discharges slowly through the diode bridge on alternate half-cycles. However, there is still sufficient voltage at the base of Q5 to maintain conduction of Q5-Q6; this keeps the beam sensor from switching to the track mode of operation. Sufficient discharge of C4 to cut off Q5 occurs after approximately 90 seconds. If however, at any time the roll steering computer should lose VOR/localizer mode voltage, or a voltage is present at the NAV OFF terminal in the HDG LOGIC block of TB5, the beam sensor will be reset to the not track state.

If the radio signal is removed during the 90-second discharge period of C4, the circuit will return to its original state. The nav capture ground will be removed, and the not track voltage will remain.

If the radio beam is lost after tracking has begun, the increased value of the signal turns on Q1. Capacitor C2 discharges, cuts off Q2, and places the collector voltage at a positive value. This switches Q3 on and removes the voltage from the anode of CR11. There is still a positive voltage at the anode of CR10 which keeps the track and nav capture signals at ground potential.

The voltage on the collector of Q2 causes C4 to recharge slowly. After approximately 90 seconds the voltage on the capacitor is sufficient, when amplified by Q5-Q6, to trigger Q7, placing the collector of Q7 at ground potential. This cuts off Q10 and the nav capture ground is removed, indicating that the radio beam has been lost. Transistor

Q8 also is cut off due to the state of Q7, allowing Q9 to conduct so that the not track voltage is present. The time delay of 90 seconds, before the tracking and capture signals are lost, is included to prevent the loss of crosswind correction (made by the complementary filter) when the aircraft passes over the cone of silence.

(7) Complementary Filter.

(a) COMPLEMENTARY FILTER GAIN Section.

The complementary filter gain section adjusts the magnitudes of the bank signal, the course datum signal, and the radio deviation signal. The bank signal, the radio signal, and the course datum signal are then all combined and applied to the complementary filter.

The bank signal is passed through R35, R36, and C3 to the complementary filter amplifier. The nominal analog of this signal is 1.2 degrees of bank per degree of commanded bank. By connecting the terminals of the BANK 1.2-block of TB5 to the mode terminals on TB5, the analog of the bank rate signal may be reduced as required when the roll steering computer is in the various modes. If, for example, terminal .4 is connected to the APR terminal, Q7 will be turned on when the roll steering computer is in the approach mode. This places R26 between the signal path and ground, forming a T-resistive network to reduce the analog of the bank rate signal from 1.2 to 1.2 - 0.4 = 0.8 degrees of bank per degree of commanded bank.

The course datum signal is passed through the parallel combination of R4 + R5, R2 + R3, and R1, and is coupled through C1 to the complementary filter amplifier. The nominal analog of this signal is 3.2 degrees of course datum per degree of commanded bank. By connecting the terminals of the CD 3.2-block of TB5 to the mode terminals on TB5, the analog of the course datum signal may be reduced as required when the roll steering signal is in the various modes. If, for example, terminal 1 is connected to the V/L terminal, Q1 will be activated when the roll steering signal is in the VOR/localizer mode. This places R2 from the signal path to ground on one side of R1 and R3 from the signal path to ground on the other side of R1, forming a pi-resistive network. The result is a reduction of the analog of the course datum signal from 3.2 to 3.2 - 1 = 2.2 degrees of course datum per degree of commanded bank.

The radio deviation signal is passed through the parallel combination of R10 + R11, R14 + R15, R18 + R19, and R22 + R23 and is coupled through C2 to the complementary filter amplifier. The nominal analog of this signal is 30 degrees of radio deviation per degree of commanded bank. By connecting the terminals of the RADIO 30- block of TB5 to the mode terminals of TB5, the analog of the radio rate signal may be reduced as required when the roll steering computer is in the various modes. If, for example, terminal 8 is connected to the V/L terminal, Q4 will be saturated when the roll steering computer is in the VOR/localizer mode. This places R18 in the signal path to ground on one side of the parallel combination of R10 + R11, R14 + R15, and R22 + R23. Saturation of Q4 also places R19 in the signal path to ground on the other side of the parallel combination, forming a pi-resistive network. The net result is the reduction of the analog of the radio rate signal from 30 to 30 - 8 = 22 degrees of radio deviation per degree of commanded bank.

By using the diodes provided on TB5, the various terminals of each of the rate adjustment blocks may be connected to the various mode terminals while still keeping the mode terminals isolated from each other. A permanent reduction in analog is effected if one of the rate adjust terminals is connected to the + terminal on TB5. The transistor associated with the particular rate adjust terminal is then permanently saturated.

(b) COMPLEMENTARY FILTER Section.

The bank signal, the radio signal, and the course datum signal, after having been adjusted for the proper gains, are combined and applied to the input of the complementary filter amplifier Q10-Q11. Operation of this amplifier is identical to that of the bank input amplifier described in paragraph 5.D.(2).

The combined signal is applied to the complementary filter. The filter is essentially a bandpass filter which derives a synthetic radio rate signal to add to the radio deviation signal. The low-pass filter removes the high frequency noise components of the radio deviation signal and also integrates the bank signal. The high-pass filter differentiates the radio deviation signal and also removes standoff voltage from the course datum signal. This allows the aircraft to assume any heading without standoff and provides crosswind correction.

During the first half-cycle of 26 /180° volt ac heading phase power, after the magnitude of the voltage exceeds 4.3 volts, a positive voltage is applied to the base of Q13 through R44 and to the base of Q14 through R45. Q13 and Q14 are connected with emitter and collector leads reversed to reduce the emitter-collector voltage drop. A positive voltage on the base of Q13 causes current in the base-collector circuit, saturating the transistor and permitting conduction in the emitter-collector circuit. The same holds true for Q14. The signal is coupled through the filter; C5 shunts the high frequencies to ground and allows only low frequencies to pass, and the combination of the primary of T2 and C9 allows only high frequencies to pass. The applied signal is thus bandpassed and is coupled through T2 to the input of the direct radio amplifier.

During the second half-cycle of 26 /180° volt ac heading phase power, Q13 and Q14 are cut off but Q12 is turned on. With Q12 conducting, R41 is placed across the signal path to ground, permitting C4 to develop a charge in the opposite direction during this half-cycle.

During the first half of the next cycle, Q12 is cut off and Q13 and Q14 are again turned on. The applied signal then charges C4 in the original direction again and bandpass filtering is accomplished. The time constant of the filter in this configuration is 8 seconds, and the center frequency of the filtered signal is at a low value.

The time constant of the low-pass filter is adjusted by C6 and C7 as they are switched in or out of the circuit by Q15 and Q16. The time constant of the high-pass filter is adjusted by C8 and C11 as they are switched in or out of the circuit by Q17 and Q18. Switches Q15 through Q18 are normally biased on by the negative voltage applied to their bases. This places C6 and C7 in parallel ground with C5 giving a time constant of 8 seconds and C8 and C11 in parallel to ground with C9 giving a time constant of 8 seconds. If the roll steering computer is in localizer capture mode, the positive LOC FREQ voltage is applied to the bases of Q16 and

Q18 overriding the negative bias, therefore turning Q16 and Q18 off. This reduces the time constant of the filter to 4 seconds and increases the center frequency of the filter.

When a voltage is present at the 2 SEC terminal of TB5, Q15 and Q17 are turned off and the time constant of the filter is reduced another 2 seconds leaving only C5 and C9 in the circuit with a time constant of 2 seconds. The center frequency of the filter is further increased. The synthetic radio rate signal is coupled through C10 from the secondary winding of T2. It is combined with the radio deviation signal at the input of amplifier Q33-Q34 of the RADIO RATE LIMITER. The output of this amplifier is coupled through C35 to the course-cut limiter.

(8) COURSE-CUT LIMITER Section.

The direct radio deviation and the synthetic radio rate signal from the complementary filter are combined with the direct course datum signal at the input to the course-cut limiter amplifier, Q35-Q36. The operation of this amplifier is the same as the bank input amplifier described in paragraph 5.D.(2).

The maximum amplitude of the amplified signal applied to the bank limit section is restricted by the action of the course-cut limiter circuit, Q37. A positive voltage developed across R101 is applied to the base of emitter-follower Q37. Q37 is biased on, and a positive voltage is developed across R99. As long as the positive value of the signal is less than the value of the voltage across R99, CR27 remains reverse biased. If the positive value of the signal exceeds the value of the voltage across R99, CR27 becomes forward biased. This clamps the anode of CR3 at the value of the voltage developed across R99, limiting the positive value of the signal. C37 and C38 hold the signal level high enough so that CR26 will limit the negative portion of the signal at the same level as the positive portion.

The value of the dc voltage developed across R99 is determined by the rate of conduction of Q37; this, in turn, is a function of the positive bias on the base of Q37. Q37 is conducting heavily when the bias is supplied by R100 and R101. The limiting level is then high.

Transistor Q40 is normally conducting due to the positive bias applied through R107 and R108. If the roll steering computer has captured the radio beam (nav capture ground is present), the positive bias is shunted to ground through CR29, and Q40 is turned off. If the roll steering computer is in VOR only mode after capturing the radio beam, the positive voltage applied through R105 will override the negative bias applied to the base of Q39 and will bias Q39 into conduction to place R110 in parallel with R101. The base voltage on Q37 is reduced by the decrease in resistance from base to ground and Q37 conducts less. The limiting voltage is consequently reduced. The effect of this is to place a limit on the roll steering signal in the VOR mode, reducing the maximum bank angle of the aircraft after capture of the VOR beam. It is also possible to turn on Q39 by strapping to the B/L terminal of the RADIO LOGIC block of TB5. This will limit the bank angle of the aircraft in all modes.

When a positive voltage is applied to the NAV OFF terminal of the HDG LOGIC block of TB5, Q38 will become saturated, and ground the output of the course-cut limiter. This leaves only heading error and course datum as inputs to the BANK LIMIT section.

(9) BANK LIMIT Section.

The limited course-cut signal is combined with the selected heading signal and the resulting signal is applied to the bank limiter. If the B/C OFF terminal on TB5 is connected to a source of +28 volts dc, Q29 will saturate and ground the bank command signal. The time at which the +28 volts dc is applied to the B/C OFF terminal depends upon strapping of the logic module; as an example, the B/C OFF terminal may be connected to the SC terminal. In this example the bank command signal will be removed whenever the roll steering computer is in extend steer command mode.

If Q30, Q31, and/or Q34 are not conducting, CR10 and CR11 are not conducting because ground is not provided for the +28-volt dc source. In this case the input signal is not coupled through the diode-resistor bridge, and the output remains at zero. This is the case for a bank limit of 0 degree.

If +28 volts dc is applied to terminal 35, 30, 25, and/or 15 of the BANK LIMIT 0+ block on TB5, Q30, Q31, Q32, and/or Q33 will become saturated. This connects R102, R105, R108, and/or R111 from the junction of CR10 and CR11 to ground. CR10 and CR11 will then be in a conductive state and cause voltage to be developed across R102, R105, R108, and/or R111. The value of this voltage depends upon the resistance of the leg of the bridge from CR10-CR11 to ground. When the logic module is strapped for a bank limit of 15 degrees, for example, the voltage is developed across R111. The voltage then is greater than if the bank limit had been set for 35 degrees and the voltage had been developed across R102 (which is a smaller resistance than R111).

If the magnitude of the ac bank command signal exceeds the voltage value from CR10-CR11 to ground, CR10 cuts off. When CR10 is cut off, current through R113 from the +28-volt supply is supplied to the input of amplifier Q34-Q35. The value of the signal applied to the amplifier is limited to the voltage level from CR10-CR11 to ground when the bank command signal amplitude exceeds the limit level.

The limited bank command signal is amplified by high-gain amplifier Q34-Q35. The operation of this amplifier is the same as that of the bank input amplifier described in paragraph 5.D.(2) except that the amount of feedback has been reduced.

The bank command signal is coupled through C31 to the rate limiter CR16-CR19. The limiting level of the bridge is determined by the current present at the junction of diodes CR18 and CR19. This is dependent upon the value of the resistor strapped across the APR TC terminals of TB4, and the amount of conduction of Q28. If +28 volts dc is strapped to terminal A2 of TB4, CR29 becomes forward biased with C36 and CR22 holding the level at a positive 15 volts. The bias level applied to the base of Q28 is determined by the voltage developed across the resistor strapped between the APR TC terminals of TB4.

When the level developed across the bias resistor exceeds 5.1 volts, CR5 is broken down and Q28 is biased into conduction. If no voltage is available at terminal A2, Q28 is still biased into conduction by the dc voltage applied through R114 and developed across the resistor strapped between the APR TC terminals of TB4.

When Q28 is on, the current from the +28-volt dc source through R97, CR16-CR18, and CR17-CR19 develops a bias voltage across the resistor between the APR TC terminals. Because diodes CR16, CR17, CR18, and CR19 are all conducting, the bias voltage developed appears at the junction of CR16 and CR17 and determines the limiting level of the bridge. The ac signal coupled through C31 causes current from the +28-volt dc source to flow through CR17. If the magnitude of the ac signal exceeds the limiting level voltage, CR16 becomes reverse biased and cuts off. During that time when CR16 is reverse biased, current from the +28-volt dc source through CR17 is held at a constant level.

The current through CR17 charges C33 on alternate half-cycles when Q45 is conducting. The rate of charging of C33 is dependent upon the magnitude of the current through CR17 with the maximum charging rate occurring when the current is at its limiting value. When Q44 is conducting, C33 is removed from the circuit. The diode bridge, CR16-CR19 and C33, acts as a current limiter which limits the bank command signal. The resistors strapped on the APR TC and APR TC terminals control the time constant of the circuit. The signal damping introduced by the circuit removes transients which may be present during mode switching. This prevents erratic movement of the command bars of the flight director indicator.

The limited bank command signal is applied to the gate of field-effect transistor Q46. Q46 has a very high input impedance, so C33 is not discharged appreciably by this circuit. The limited bank command signal is amplified by Q46-Q47. A feedback line from the collector of Q47 is applied to the base circuit of Q34 to provide further damping of the bank command signal. The output of the bank command limiter is taken off the emitter of Q47 and coupled through C26 to the pitch steering output amplifier.

(10) Roll Steering Output Amplifier.

The bank command signal is combined with the bank attitude signal at the input of output amplifier Q37-Q38-Q39 of TB1. The phase of the bank attitude signal and the phase of the bank command signal differ by 180 degrees, so that the resulting signal is proportional to the deviation from the commanded bank attitude. The signal is developed across R122 and applied to the base of Q37. An increase in base voltage on Q37 causes an increase in emitter current in Q37. The increased emitter current causes an increase in base current in Q38. Current amplification takes place, and the emitter current in Q38 increases, reducing the collector voltage. The collector voltage of Q38 is applied to the base of emitter follower Q39. The reduced base voltage of Q39 causes the voltage across R126 to increase. A feedback path to the base of Q37 is provided from R126 through C14 and R125 to increase the stability of the amplifier. B+ is supplied to the collectors of Q37 and Q38 through R123 and R124 and to the collector of Q39 through R127. The circuit exhibits the characteristics of an emitter-follower amplifier, namely, high input impedance, low output impedance, almost unity voltage gain, and high current gain.

The ac signal from the output amplifier is coupled through C15 to the primary of T5. The secondary of T5 is connected to the phase-detector circuit which functions similarly to a full wave rectifier. Switches Q40 and Q41 are alternately turned on and off by the $26\angle 0^\circ$ volt ac and $26\angle 180^\circ$ volt ac heading power. When the $26\angle 0^\circ$ volt ac source is positive with respect to ground, the $26\angle 180^\circ$ volt ac source is negative. The $26\angle 0^\circ$ volt ac source causes Q40 to switch on while the negative going $26\angle 0^\circ$ volt ac source holds Q41 off. With Q40 on, terminal 5 of T3 is essentially placed at ground potential through the collector-emitter circuit of Q40. During the alternate half-cycle, Q41 is turned on and terminal 3 is provided with a ground. The output taken of the center tap of the secondary of T5 is a pulsating dc voltage. The polarity of the signal depends upon the phase of the ac signal on the primary of T5 and determines whether a bank-right or bank-left command is given.

The center tap of T5 is connected to the OUT terminal of the S/N block of TB5.

The logic module is usually strapped so that the OUTPUT terminal is connected to the terminal marked 21. Then the output is applied directly to pin 21 on P1B. Logic module strapping will place either a 511-ohm or a 1K resistor between the roll steering output and ground to match the output of the roll steering computer with the input to the steering display device. R142, R143, and C43 provide low-pass filtering to the input of the CONVERTER section of TB2.

(11) CONVERTER Section.

The CONVERTER section is used as the input and control section to the servoamplifier on TB1.

The filtered dc from the ROLL STEERING section is applied to chopper Q19-Q20 of TB2. V-bar roll position (XMTR Z) feedback from the flight director indicator controls the operation of the chopper. Position Z feedback is a 400-cps signal indicating V-bar position and is in phase with the signal applied to the control winding of the roll command synchro of the flight director indicator. When the position Z feedback goes positive, CR36 is forward biased and Q19 is turned on placing a ground on the input line. When the position Z signal goes negative, CR37 becomes forward biased and pnp transistor Q20 is turned on allowing C7 to charge up. C7 discharges when Q19 is on again during the next half-cycle of the position Z signal. The output is an ac signal in phase with the position Z signal.

Strapping in the DISPLAY block of TB4 controls the level of the signal to amplifier Q21-Q22 which operates similarly to the bank input amplifier described in paragraph 5.D.(2). The output of amplifier Q21-Q22 is applied to a limiter circuit composed of CR38 through CR41. A dc bias voltage is developed across R70 by the current from the +28-volt dc source through CR38-CR40 and CR39-CR41. Because diodes CR38, CR39, CR40, and CR41 are all conducting, the bias voltage developed across R70 appears at the junction of CR38 and CR39 and determines the limiting level of the bridge.

When off mode or out-of-view voltages are present through CR91 or CR92, Q23 is biased on and a ground is placed on the bias voltage to limiter CR38-CR41. This will prevent the limiter from conducting and remove the bank command signal, leaving only position X feedback and rate feedback as command signals.

The limited bank command signal is mixed with position X and generator rate feedback from the flight director indicator and applied to amplifier Q24-Q25-Q26. This amplifier operates the same as that of the roll steering output amplifier described in paragraph 5.D.(10). The output of this amplifier is applied to quadrature rejection network Q27-Q28. The operation of this network is much the same as that of the quadrature rejection network described in paragraph 5.D.(3)(b). The 26-volt ac command power controls the operation of the network with C15 shunting the quadrature components to ground.

The output of the CONVERTER section is applied through C16 to the input of the servoamplifier on TB1 where it is amplified to drive the roll command servomotor in the flight director indicator.

(12) Servoamplifier.

The input to the SERVO AMPLIFIER section is voltage limited by CR18 and CR19 and applied through C10 to the base of Q43. Amplifier Q43-Q47 and R25 form a voltage divider supplying bias voltage to the bases of Q41 and Q44.

When positive half-cycle voltage is applied to the base of Q43, the emitter-collector resistance decreases. This decreased resistance lowers the voltage on the bases of Q41 and Q44. Therefore Q44 is forward biased since it is operated between the center point of voltage divider R44-R113 and ground. Q41 is reverse biased since it operates between the center point of the voltage divider R44-R113 and positive voltage supply line.

On negative half-cycles of the input signal, the emitter-collector resistance of Q43 increases thus raising the voltage on the bases of Q41 and Q44 sufficiently to forward bias Q41 and reverse bias Q44. CR30 prevents Q41 from firing prematurely and causing distortion when the signals are recombined in the output stage.

Q41 and Q44 drive amplifiers Q42 and Q45 respectively. The collectors of Q42 and Q45 form the common output of the half-cycle signals. The reassembled signal is coupled through C40 to obtain the approximately 90-degree phase shift required to excite the servomotor control winding.

(13) Mode Generator.

The MODE GEN section of TB2 does the switching necessary to provide mode voltages to various sections of the roll steering computer. The MODE GEN section also contains some of the pitch computer monitor logic switching. The theory of operation of the mode generator is broken up according to the modes available, presenting the conditions necessary for the roll steering computer to be in each particular mode.

(a) Heading Mode.

Heading mode voltage is applied to the roll steering computer through P1B-47 from the flight director control when the mode selector is placed in heading mode. Mode voltage is applied to the base of Q3 through CR88 and the base of Q6 through CR15 to the ANNUNCIATOR LOGIC section and to the logic module where it is available for strapping purposes.

(b) VOR Mode.

When the roll steering computer is in VOR mode, gains and limits are adjusted for maximum sensitivity when flying the VOR beam. The roll steering computer will be in VOR only mode when Q1 of the MODE GEN section is conducting. When the roll steering computer is in VOR/localizer mode (+28-volt dc applied to P1B-46), a positive voltage will be developed across R13 biasing Q2 on. When Q2 is on, R15 is placed in the circuit between the base of Q3 and ground. If the navigation receiver is tuned to a localizer frequency, a positive voltage is applied through

P1A-43, CR89 becomes forward biased, a positive voltage is developed across R15, and Q3 is biased on. When Q3 is on, a ground is placed on the base of Q1 so it will not be biased on. If the roll steering computer is in heading mode, CR88 will become forward biased and Q3 will be biased on. When Q3 is not conducting, Q1 will be conducting and the roll steering computer will be in VOR only mode.

(c) Localizer Mode.

When the roll steering computer is in localizer mode, gains and limits are adjusted to decrease the sensitivity of the FD-109 to fast angular deviations from the localizer beam. The roll steering computer will be in localizer only mode when Q5 is conducting. Q5 will be biased on by the positive base voltage applied through R17, unless Q6 is conducting. Q6 will become biased on whenever Q2 is on and a positive voltage is applied to its base circuit through CR93, CR14, or CR15.

(d) Other Switching.

When Q8 becomes biased on, a ground is placed on the RADIO LOGIC V/L terminal of TB5. For Q8 to be biased on, it is necessary that a positive voltage large enough to break down CR10 be present at the HDG V/L terminal of the HDG LOGIC block of TB5. Also the roll steering computer must be in VOR/localizer mode. If the aircraft has captured the radio beam, nav capture ground is present, placing the anode of CR10 at ground potential, and cutting off Q8. Q7 will be biased on whenever a ground is present at the ANN terminal of the RADIO LOGIC section of TB5. When Q7 is conducting, the +38-volt dc heading power forward biases CR9 and locks Q8 on.

(14) MONITOR Section.

The MONITOR section of the roll steering computer, when indicating proper operation, has three outputs: +28 volts dc steering flag voltage, a steering flag ground, and a ground on the out-of-view bias supplied to the pitch steering computer. The monitor circuit, which grounds the out-of-view bias and prevents the V-bars of the flight director indicator from being driven out of view, is separate from the steering flag monitor circuit and will be described first.

(a) Out-of-View.

In order for transistor Q9 to be biased on, CR23 and CR25 must be reverse biased and CR24 forward biased. CR25 normally will be forward biased by the negative voltage developed across R27. If gyro high-level flag voltage is present indicating proper operation of the vertical reference, the voltage at the cathode of CR25 becomes positive and CR25 is back biased. CR23 will normally be forward biased by the negative voltage developed across R29. If a positive voltage is present at the NAV OFF terminal of the HDG LOGIC block of TB5, the voltage at the cathode of CR23 becomes positive and CR23 is back biased. The same reasoning holds true for VOR/localizer high-level flag voltage applied through P1B-11, synthetic VOR/localizer high-level flag voltage applied through P1A-11, and bank command off voltage present at the B/C OFF terminal of TB5. When CR23 and CR25 are reverse biased and either bank command off or compass monitor voltage is present, CR24 will become forward biased and Q9 will be conducting. When Q9 is conducting, a ground is placed on the base circuit of Q10, biasing Q10 into conduction.

When Q10 is conducting, +28 volts dc is applied through R40 to back bias CR31. When the pitch steering computer is operating properly, pitch computer monitor voltage will be applied to the roll steering computer through P1B-12. When pitch computer monitor voltage is present, it is applied through R43 to back bias CR30. When both CR30 and CR31 are reverse biased, a positive voltage is applied through CR32 to forward bias the base of Q13.

If the roll steering computer is in off mode, a positive voltage is applied through P1A-41 and CR33 to forward bias Q13. When Q13 is biased on, a ground is placed on terminal B of the OUT OF VIEW block of TB4. When terminal B is strapped to terminal D and a ground is present at terminal D, Q16 will become biased into conduction and a positive voltage will be applied to the base circuit of Q18. When Q18 is biased on, a ground is placed on the out-of-view bias voltage. The out-of-view bias is +28 volts dc servocommand power generated in the power supply of the roll steering computer and applied to the roll steering computer CONVERTER section and to the pitch steering computer CONVERTER section where it cuts off the pitch command signal, allowing the V-bars to be driven out of view.

(b) Steering Flag.

In order for Q11 to be biased on and provide a ground for the base circuit of Q12, a number of conditions need to be met. If position Z feedback from the flight director indicator is present, it will be rectified by CR29 and summed with the negative half-cycles of the 26-volt ac command power. The result is a positive voltage which will back bias CR27. It is also necessary that the output from the CONVERTER section be a null. If it is not nulled, the negative half-cycles passed by CR26 will keep Q11 biased off. When both CR26 and CR27 are not conducting, the +28-volt dc command power applied to the base circuit of Q11 through R36 and R37 will keep Q11 biased into saturation.

When Q11 is biased on, and if the pitch servomonitor output indicates proper operation of the pitch steering computer servochannel (+28 volts dc at P1A-12), Q12 will be biased into conduction. Q17 will always be biased on when flag and annunciator power is present at P1A-54. When Q17 is on, a ground is placed on terminal C of the OUT OF VIEW section of TB4. When terminal A is strapped to terminal C and Q14 is conducting, a ground is placed on the anode of CR45. This is the steering flag ground and is available at P1B-28. The steering flag ground also enables Q15 to be biased into saturation so that the +28-volt dc flag and annunciator power is available at P1B-38. If either the steering flag ground or the steering flag power is lost, the STEER flag on the flight director indicator will be in view.

(15) Annunciators.

The roll steering computer annunciator switches all operate in the same manner. Therefore the operation of only the external steer command annunciator switches will be explained. When a positive voltage is developed across R131, Q51 will be biased into conduction, providing a ground for the annunciator. When Q51 is conducting, a ground is also placed on the base circuit of pnp transistor Q57 so the base becomes more negative than the collector. Q57 will be biased on and the +28 volts dc applied to the roll steering computer through P1A-54 will be applied to the external annunciator through P1A-16.

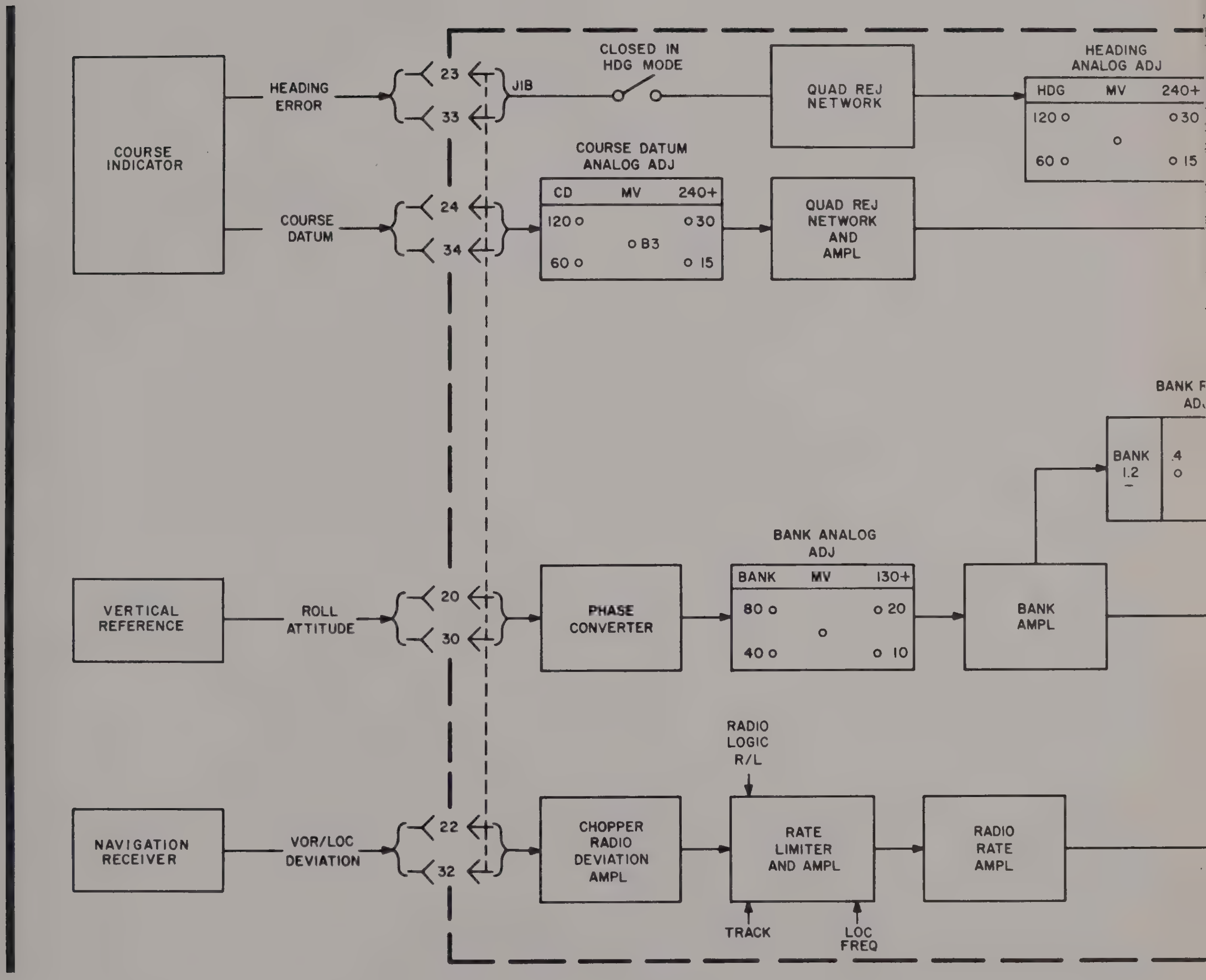
The voltages for the annunciator switching are applied to the ANNUNCIATOR section from the ANNUNCIATOR LOGIC section if proper strapping has taken place in the ANNUNCIATOR section of the logic module. The external steer command annunciator will be on if +28 volts dc is applied from P1B-44 through CR81 to the ANNUNCIATOR section.

The glide slope extension on annunciator will be illuminated if glide slope extension mode voltage is present at P1A-39 and if the roll steering computer is not external steer command mode. If, in external steer command mode, +28 volts dc is applied to the base circuit of Q44 causing it to conduct, Q44 places a ground on the glide slope extension annunciator line.

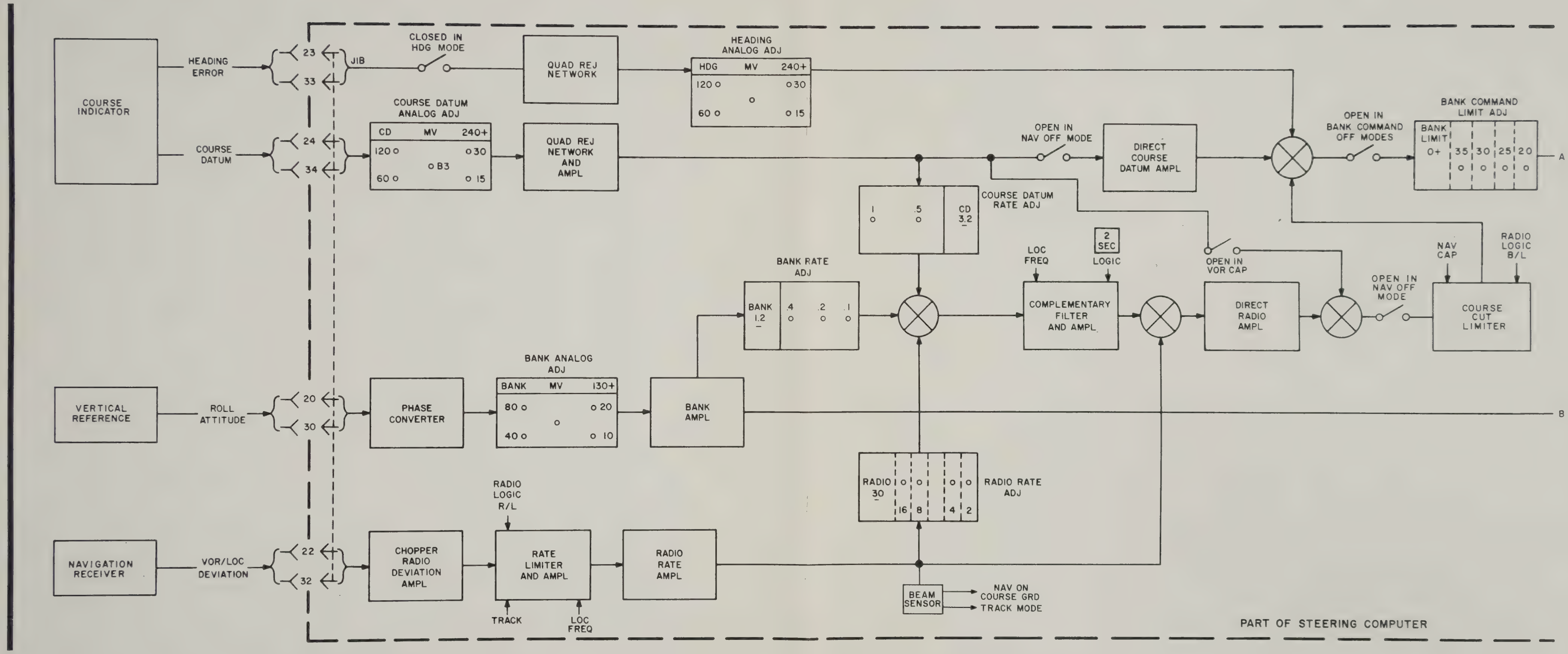
The approach on annunciator will be illuminated if the roll steer computer is in approach mode and not in external steer command or glide slope extension mode. If either external steer command or glide slope extension mode voltages are applied to the base circuit of Q43 through CR77 or CR78, Q43 will become biased on. If Q43 is conducting, a ground is placed on the base circuit of Q45 causing it to be biased off. This blocks the approach mode voltage from being applied to the approach or annunciator. If the roll steering computer is in glide slope mode (+28 volts dc available at P1B-45) and has captured the localizer beam (VOR/loc on course ground available), Q39 will be biased on and the approach on annunciator switching will function as if the roll steering computer were manually switched to approach mode.

The VOR/localizer capture annunciator will be illuminated when the roll steering computer has captured the radio beam and is not in external steer command, glide slope extension, or approach mode. When the roll steering computer is in VOR/localizer mode and VOR/localizer on course ground is present indicating radio capture, Q40 is biased on and a positive voltage is applied to the ANNUNCIATOR DRIVE section if Q41 is not saturated. Q41 will become saturated and place a ground on the annunciator drive voltage if external steer command, glide slope extension, or approach mode voltages are available through CR68 or CR69. The heading on annunciator will be illuminated if the roll steering computer is in heading mode (+28 volts dc present at P1B-47) and not in external steer command, glide slope extension, or approach mode or has not captured the radio beam. When any of the other mode voltages are available, Q42 becomes biased into conduction and places a ground on the heading mode voltage to the ANNUNCIATOR DRIVE section.

The glide slope arm annunciator will become illuminated when the roll steering computer is in VOR/localizer mode and the mode voltage is applied through CR74 to the ANNUNCIATOR DRIVE section.


COURSE INDICATOR
HEADING ERROR
COURSE DATUM
23
33
24
34
JIB
CLOSED IN HDG MODE
QUAD REJ NETWORK
HEADING ANALOG ADJ
HDG MV 240+
120 30
60 15
COURSE DATUM ANALOG ADJ
CD MV 240+
120 30
B3
60 15
QUAD REJ NETWORK AND AMPL
BANK
BANK 1.2
.4
VERTICAL REFERENCE
ROLL ATTITUDE
20
30
PHASE CONVERTER
BANK ANALOG ADJ
BANK MV 130+
80 20
40 10
BANK AMPL
RADIO LOGIC R/L
NAVIGATION RECEIVER
VOR/LOC DEVIATION
22
32
CHOPPER RADIO DEVIATION AMPL
RATE LIMITER AND AMPL
RADIO RATE AMPL
TRACK
LOC FREQ

562R-1 Simplified Block Diagram (Sheet 1 of 2)
Figure 6


COURSE INDICATOR
HEADING ERROR
COURSE DATUM
VERTICAL REFERENCE
ROLL ATTITUDE
NAVIGATION RECEIVER
VOR/LOC DEVIATION
23
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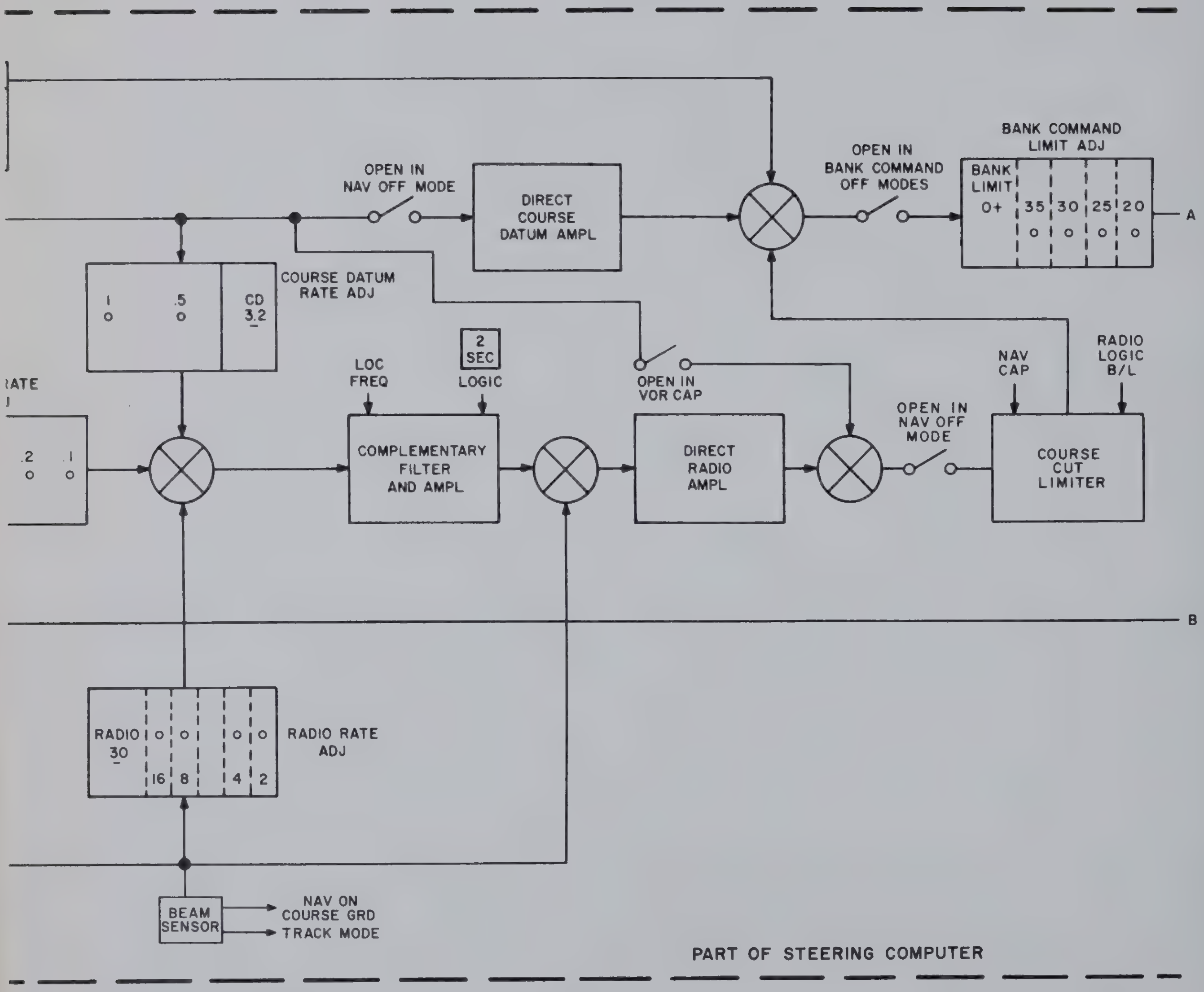
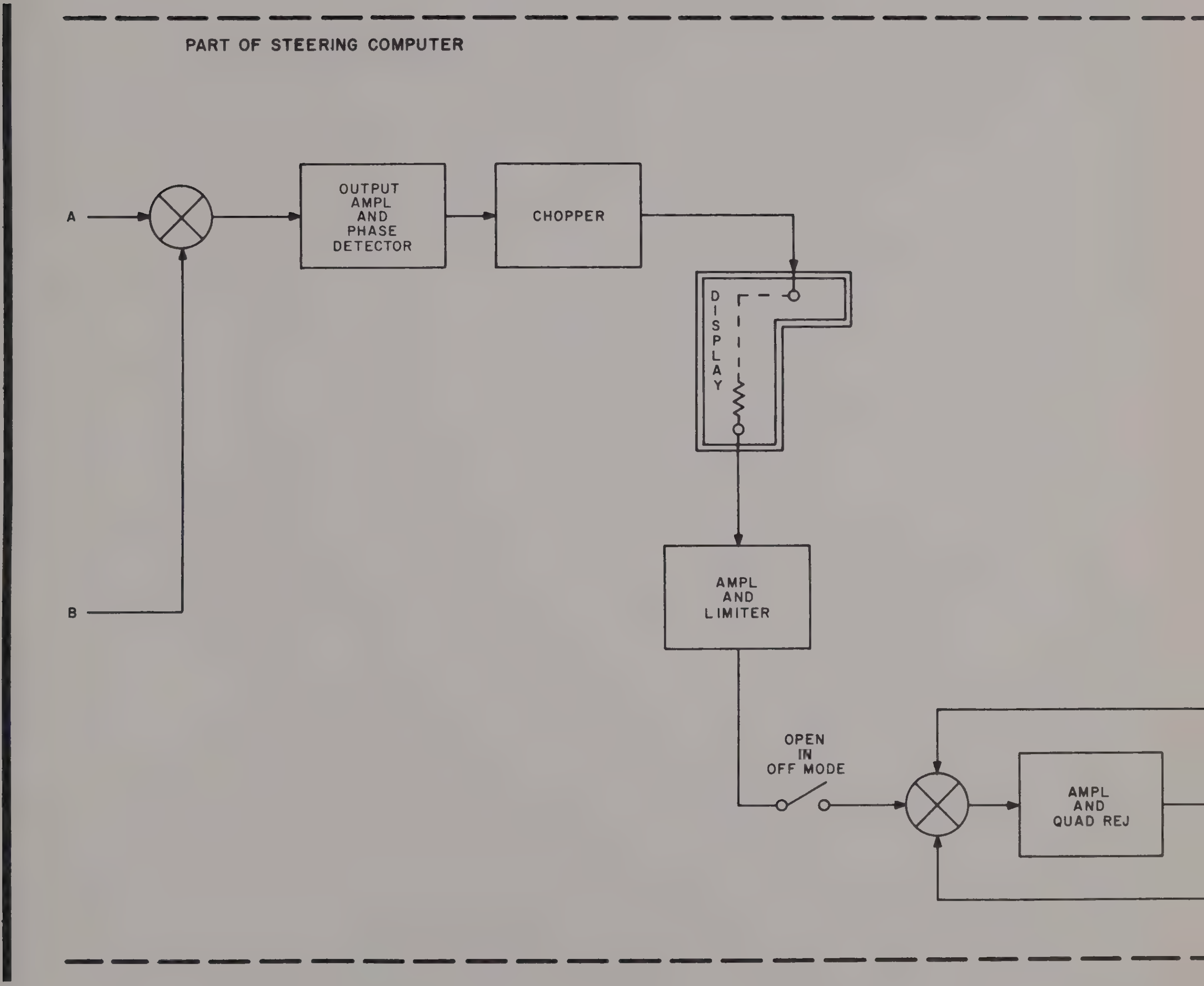
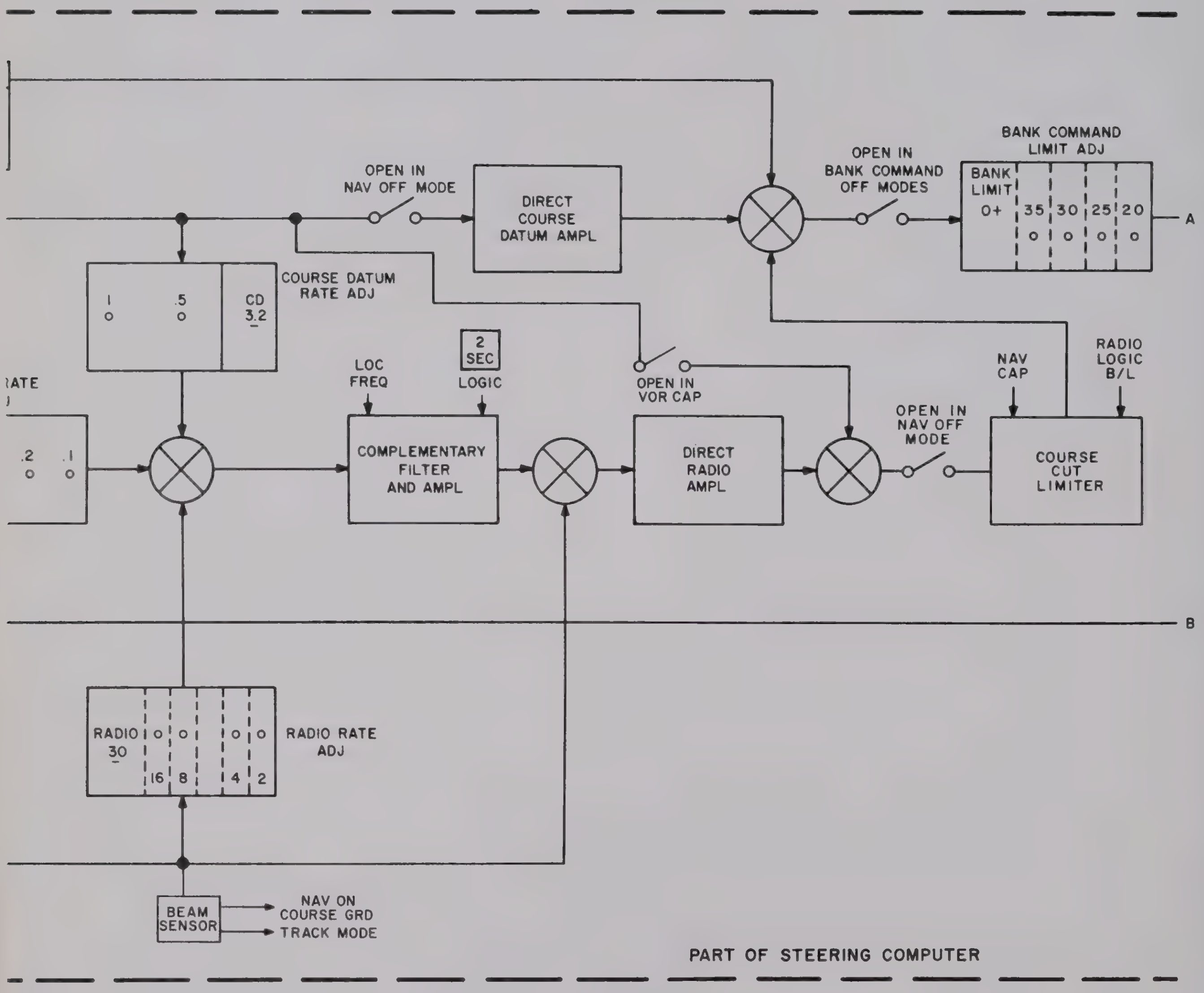
JIB
CLOSED IN HDG MODE
QUAD REJ NETWORK
HEADING ANALOG ADJ
HDG
MV
240+
120
30
60
15
COURSE DATUM ANALOG ADJ
CD
B3
QUAD REJ NETWORK AND AMPL
OPEN IN NAV OFF MODE
DIRECT COURSE DATUM AMPL
OPEN IN BANK COMMAND OFF MODES
BANK COMMAND LIMIT ADJ
BANK LIMIT
0+
35
30
25
20
A
COURSE DATUM RATE ADJ
1
.5
CD 3.2
OPEN IN VOR CAP
LOC FREQ
2 SEC
LOGIC
NAV CAP
RADIO LOGIC B/L
BANK RATE ADJ
BANK 1.2
.4
.2
.1
COMPLEMENTARY FILTER AND AMPL
DIRECT RADIO AMPL
OPEN IN NAV OFF MODE
COURSE CUT LIMITER
BANK ANALOG ADJ
BANK
130+
80
40
10
PHASE CONVERTER
BANK AMPL
B
RADIO LOGIC R/L
CHOPPER RADIO DEVIATION AMPL
RATE LIMITER AND AMPL
TRACK
LOC FREQ
RADIO RATE AMPL
RADIO 30
16
8
4
2
RADIO RATE ADJ
BEAM SENSOR
NAV ON COURSE GRD
TRACK MODE
PART OF STEERING COMPUTER

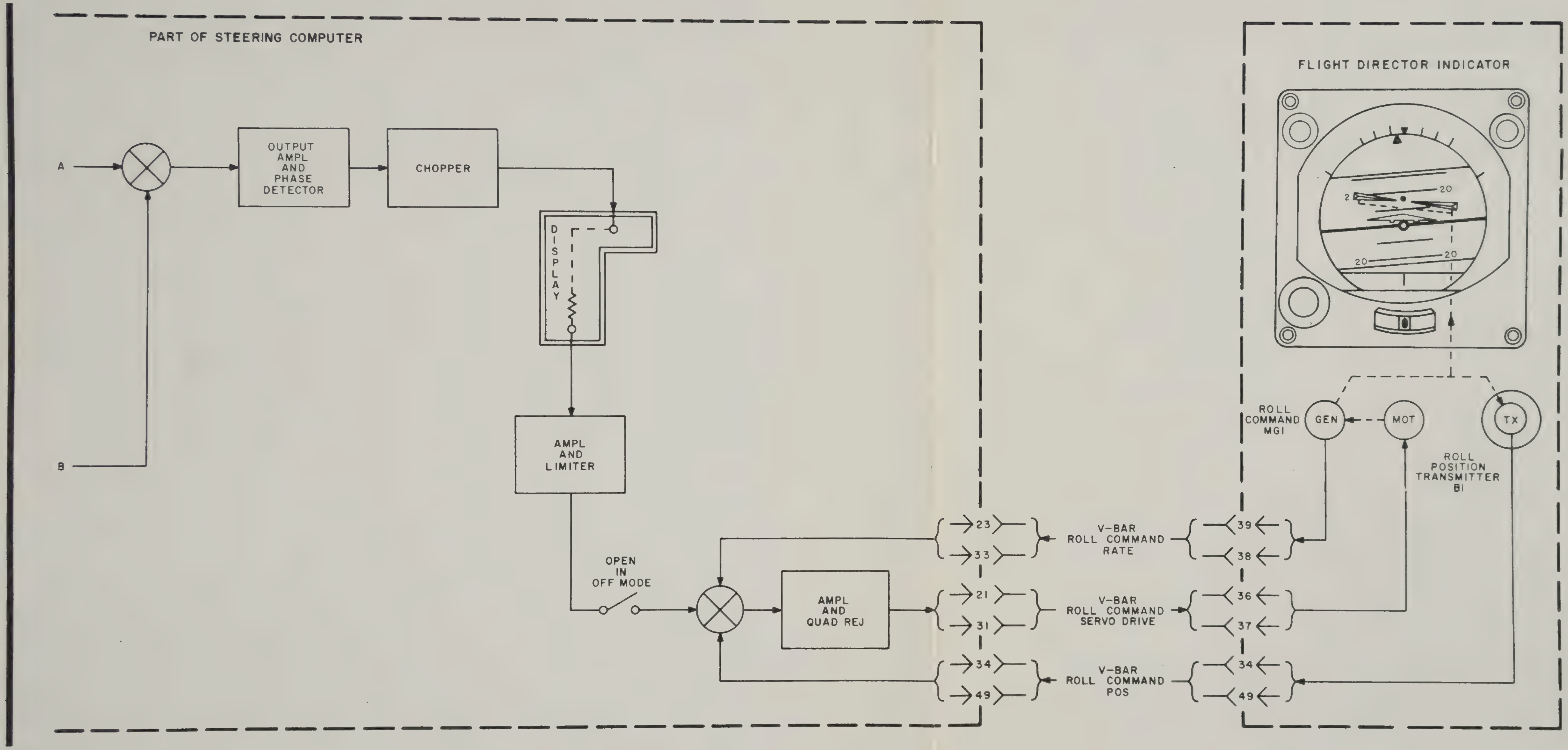
562R-1 Simplified Block Diagram (Sheet 1 of 2)
Figure 6


OPEN IN
NAV OFF MODE
DIRECT
COURSE
DATUM AMPL
OPEN IN
BANK COMMAND
OFF MODES
BANK COMMAND
LIMIT ADJ
BANK
LIMIT
0+
35
30
25
20
A
1
.5
CD
3.2
COURSE DATUM
RATE ADJ
2
SEC
LOC
FREQ
LOGIC
OPEN IN
VOR CAP
NAV
CAP
RADIO
LOGIC
B/L
OPEN IN
NAV OFF
MODE
.2
.1
COMPLEMENTARY
FILTER
AND AMPL
DIRECT
RADIO
AMPL
COURSE
CUT
LIMITER
B
RADIO
30
16
8
4
2
RADIO RATE
ADJ
BEAM
SENSOR
NAV ON
COURSE GRD
TRACK MODE
PART OF STEERING COMPUTER

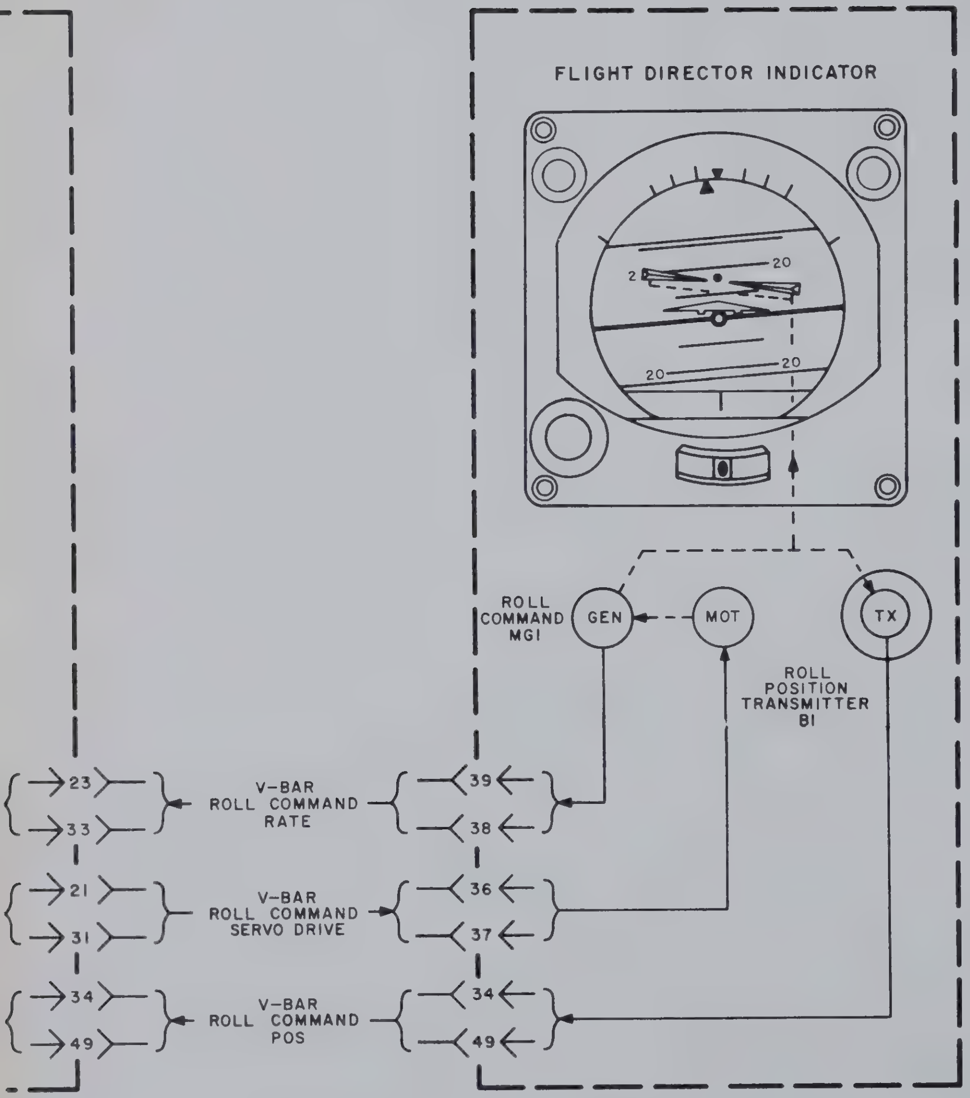

PART OF STEERING COMPUTER
A
B
OUTPUT AMPL AND PHASE DETECTOR
CHOPPER
DISPLAY
AMPL AND LIMITER
OPEN IN OFF MODE
AMPL AND QUAD REJ

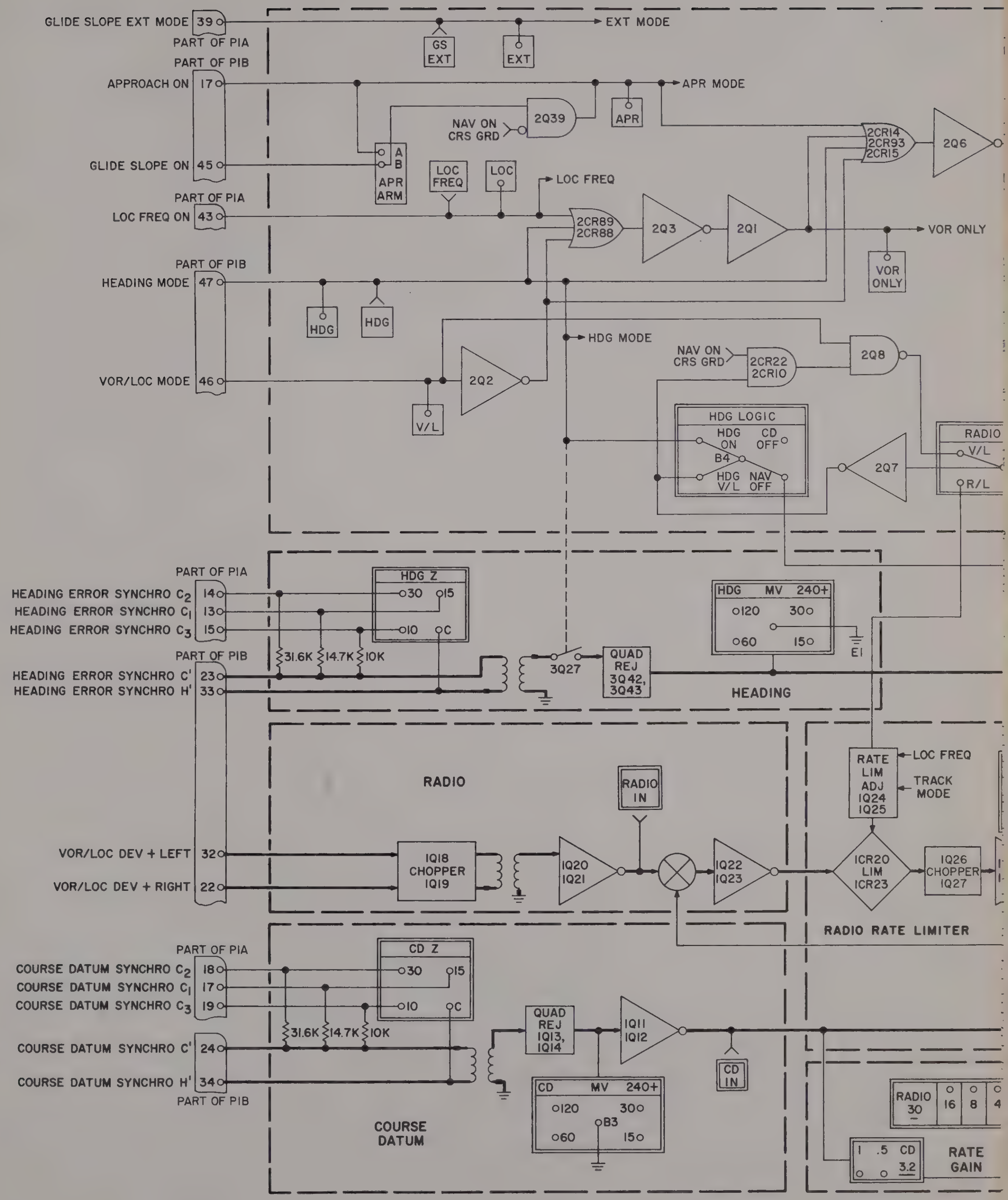
562R-1 Simplified Block Diagram (Sheet 2 of 2)
Figure 6


OPEN IN
NAV OFF MODE
DIRECT
COURSE
DATUM AMPL
OPEN IN
BANK COMMAND
OFF MODES
BANK COMMAND
LIMIT ADJ
BANK
LIMIT
0+
35
30
25
20
A
1
.5
CD
3.2
COURSE DATUM
RATE ADJ
2
SEC
LOGIC
LOC
FREQ
OPEN IN
VOR CAP
NAV
CAP
RADIO
LOGIC
B/L
ATE
.2
.1
COMPLEMENTARY
FILTER
AND AMPL
DIRECT
RADIO
AMPL
OPEN IN
NAV OFF
MODE
COURSE
CUT
LIMITER
B
RADIO
30
16
8
4
2
RADIO RATE
ADJ
BEAM
SENSOR
NAV ON
COURSE GRD
TRACK MODE
PART OF STEERING COMPUTER

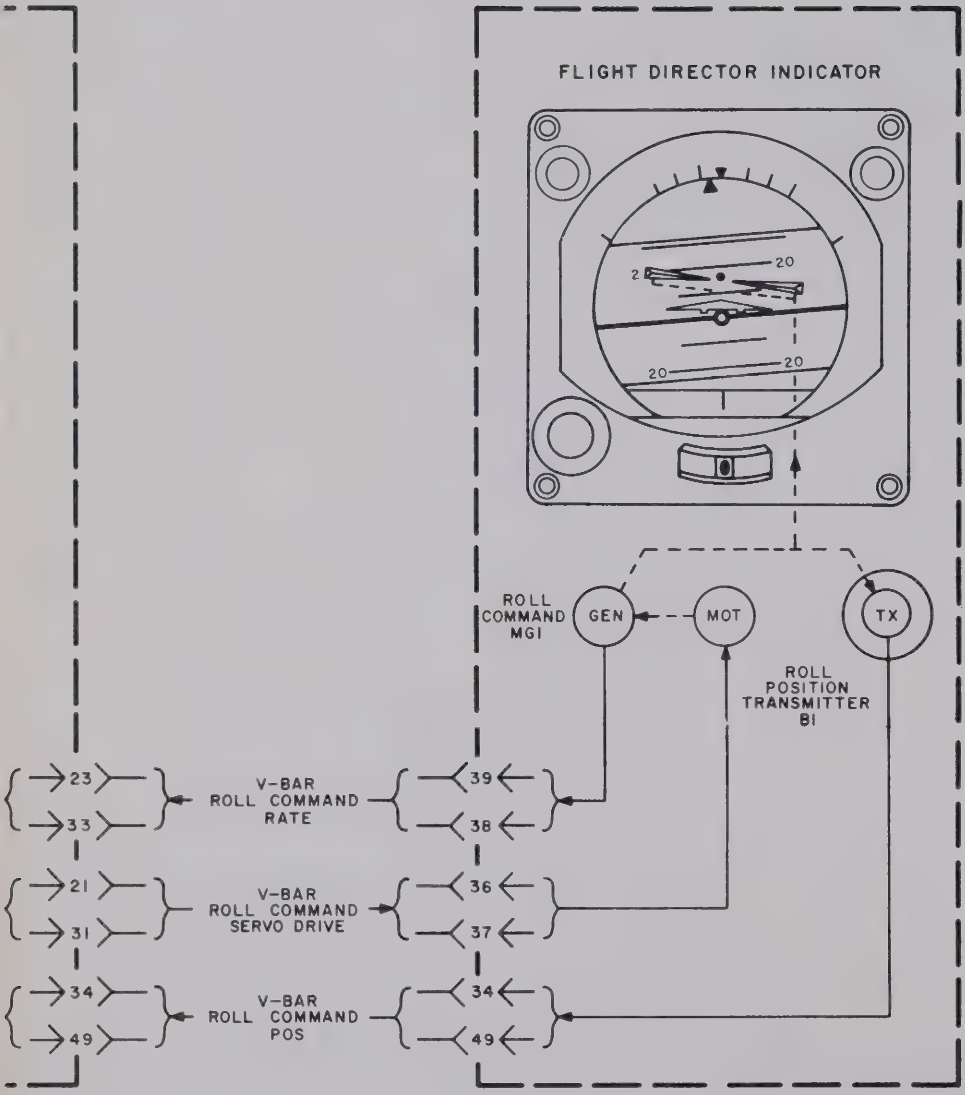

PART OF STEERING COMPUTER
A
B
OUTPUT AMPL AND PHASE DETECTOR
CHOPPER
DISPLAY
AMPL AND LIMITER
OPEN IN OFF MODE
AMPL AND QUAD REJ
23
33
21
31
34
49
V-BAR ROLL COMMAND RATE
V-BAR ROLL COMMAND SERVO DRIVE
V-BAR ROLL COMMAND POS
39
38
36
37
34
49
FLIGHT DIRECTOR INDICATOR
2
20
20
20
ROLL COMMAND MG1
GEN
MOT
TX
ROLL POSITION TRANSMITTER B1

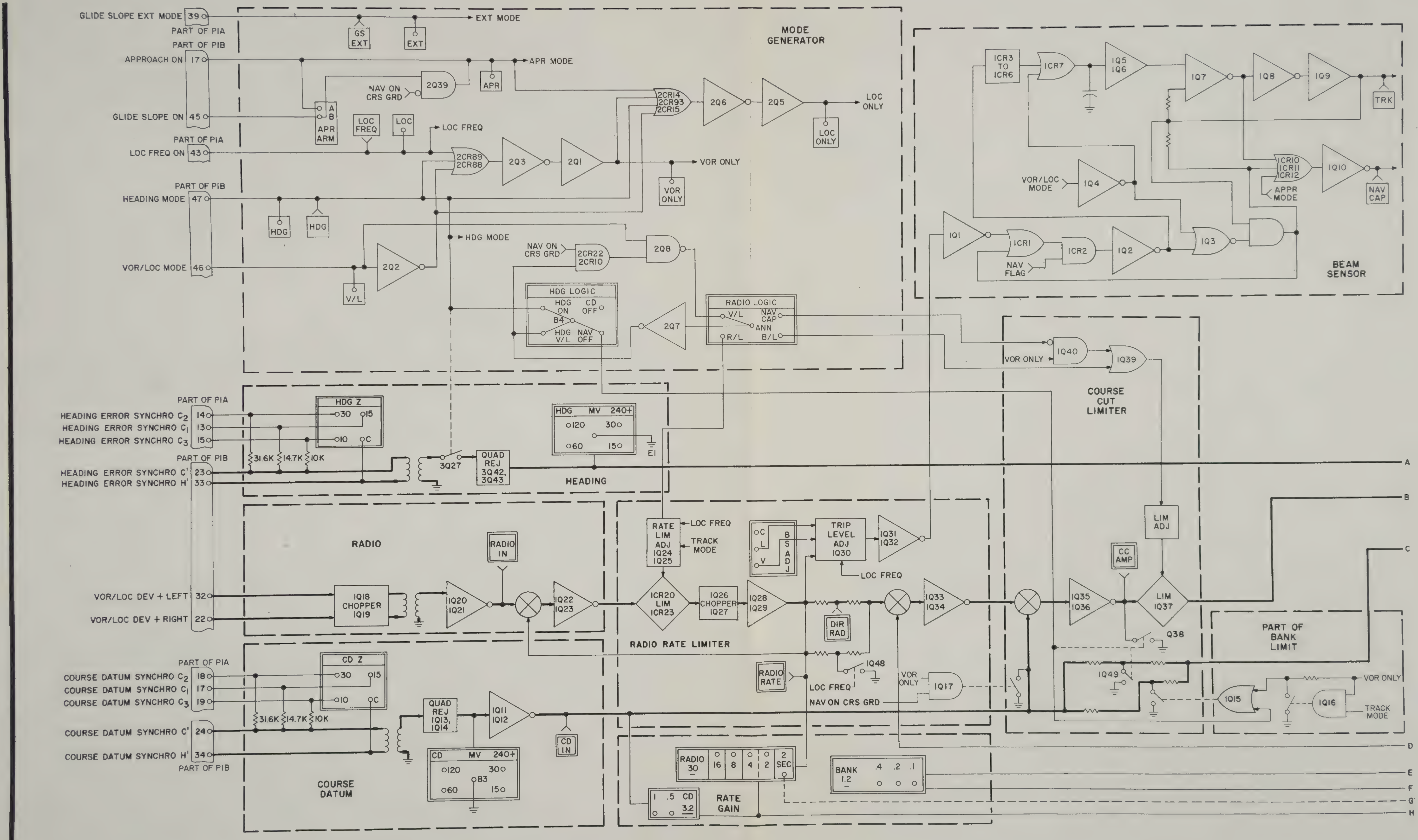
562R-1 Simplified Block Diagram (Sheet 2 of 2)
Figure 6


FLIGHT DIRECTOR INDICATOR
ROLL COMMAND MGI
GEN
MOT
TX
ROLL POSITION TRANSMITTER BI
V-BAR ROLL COMMAND RATE
V-BAR ROLL COMMAND SERVO DRIVE
V-BAR ROLL COMMAND POS

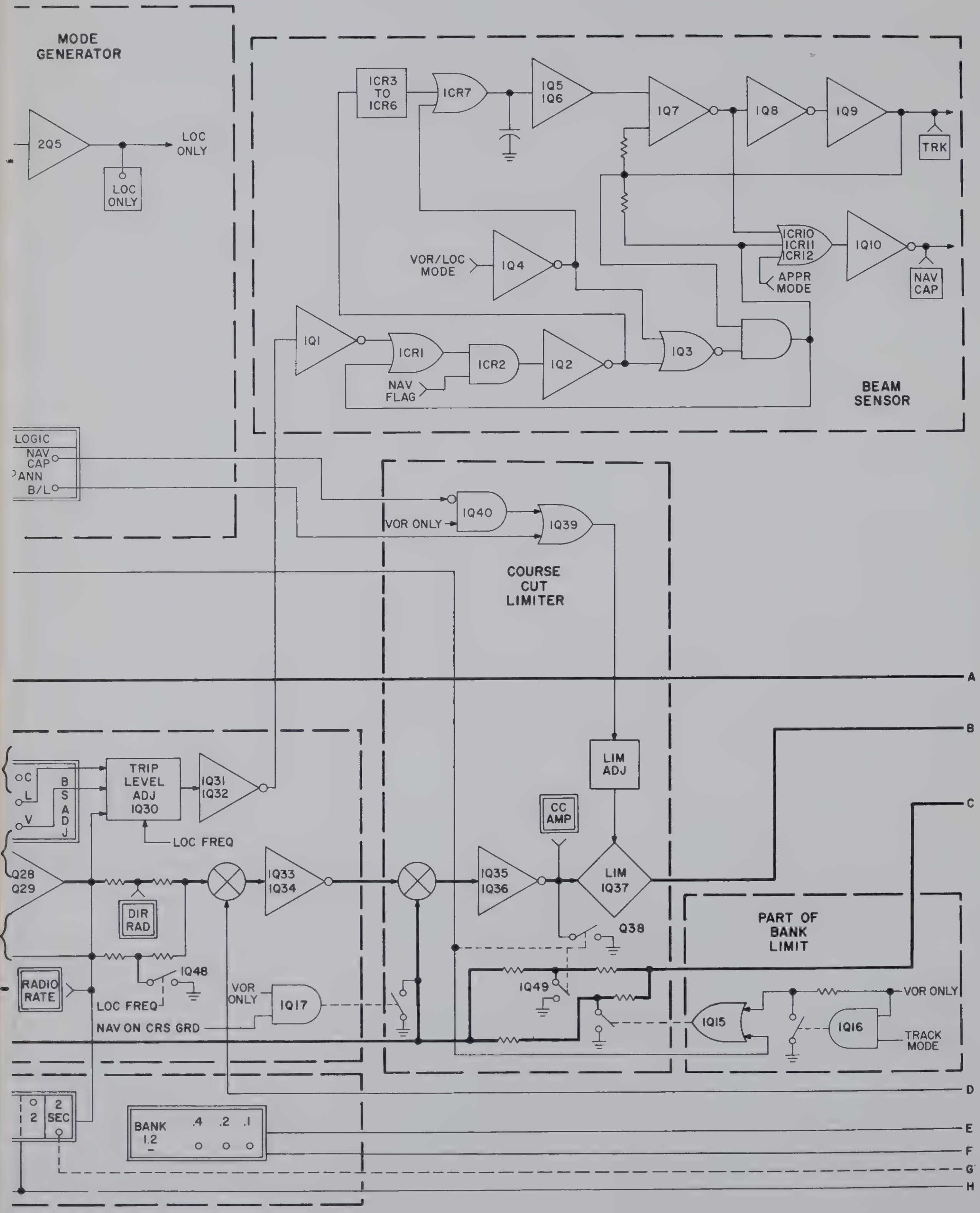

GLIDE SLOPE EXT MODE
39
PART OF PIA
PART OF PIB
APPROACH ON
17
GLIDE SLOPE ON
45
PART OF PIA
LOC FREQ ON
43
PART OF PIB
HEADING MODE
47
VOR/LOC MODE
46
GS EXT
EXT
EXT MODE
APR MODE
APR
NAV ON CRS GRD
2Q39
A
B
APR ARM
LOC FREQ
LOC
LOC FREQ
2CR89
2CR88
2Q3
2Q1
2CR14
2CR93
2CR15
2Q6
VOR ONLY
VOR ONLY
HDG
HDG
HDG MODE
V/L
2Q2
NAV ON CRS GRD
2CR22
2CR10
2Q8
HDG LOGIC
HDG ON
CD OFF
B4
HDG V/L
NAV OFF
2Q7
RADIO
V/L
R/L
PART OF PIA
HEADING ERROR SYNCHRO C_2
14
HEADING ERROR SYNCHRO C_1
13
HEADING ERROR SYNCHRO C_3
15
PART OF PIB
HEADING ERROR SYNCHRO C'
23
HEADING ERROR SYNCHRO H'
33
HDG Z
30
15
10
C
31.6K
14.7K
10K
3Q27
QUAD REJ 3Q42, 3Q43
HDG MV 240+
120
300
60
150
E1
HEADING
RADIO
RADIO IN
VOR/LOC DEV + LEFT
32
VOR/LOC DEV + RIGHT
22
1Q18 CHOPPER 1Q19
1Q20 1Q21
1Q22 1Q23
RATE LIM ADJ 1Q24 1Q25
LOC FREQ
TRACK MODE
1CR20 LIM 1CR23
1Q26 CHOPPER 1Q27
RADIO RATE LIMITER
PART OF PIA
COURSE DATUM SYNCHRO C_2
18
COURSE DATUM SYNCHRO C_1
17
COURSE DATUM SYNCHRO C_3
19
COURSE DATUM SYNCHRO C'
24
COURSE DATUM SYNCHRO H'
34
PART OF PIB
CD Z
30
15
10
C
31.6K
14.7K
10K
QUAD REJ 1Q13, 1Q14
1Q11 1Q12
CD IN
CD MV 240+
120
300
B3
60
150
COURSE DATUM
RADIO 30
16
8
4
1
.5
CD
3.2
RATE GAIN

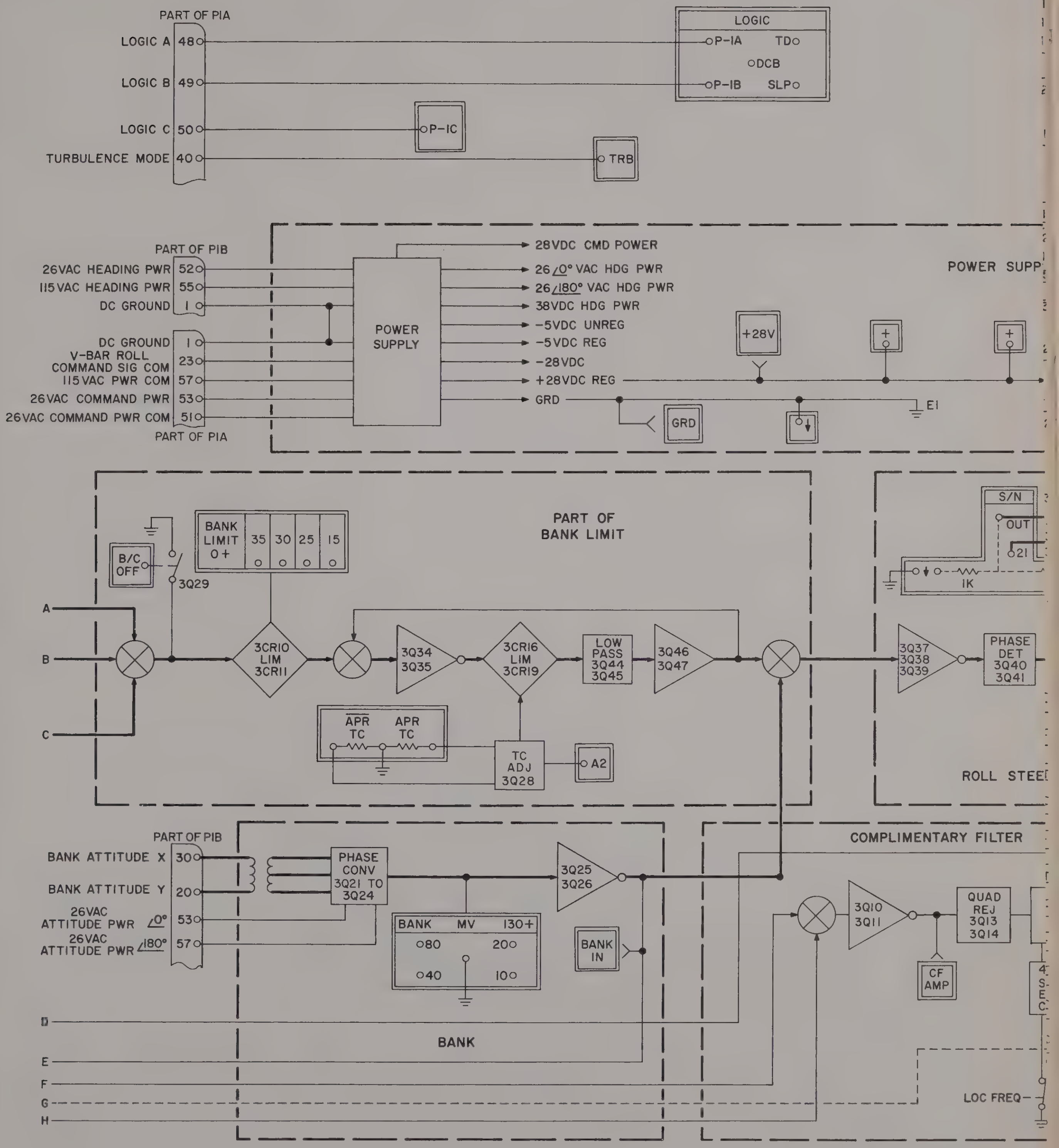
562R-1 Logic Diagram (Sheet 1 of 3)
Figure 7


FLIGHT DIRECTOR INDICATOR
ROLL COMMAND MGI
GEN
MOT
TX
ROLL POSITION TRANSMITTER B1
V-BAR ROLL COMMAND RATE
V-BAR ROLL COMMAND SERVO DRIVE
V-BAR ROLL COMMAND POS

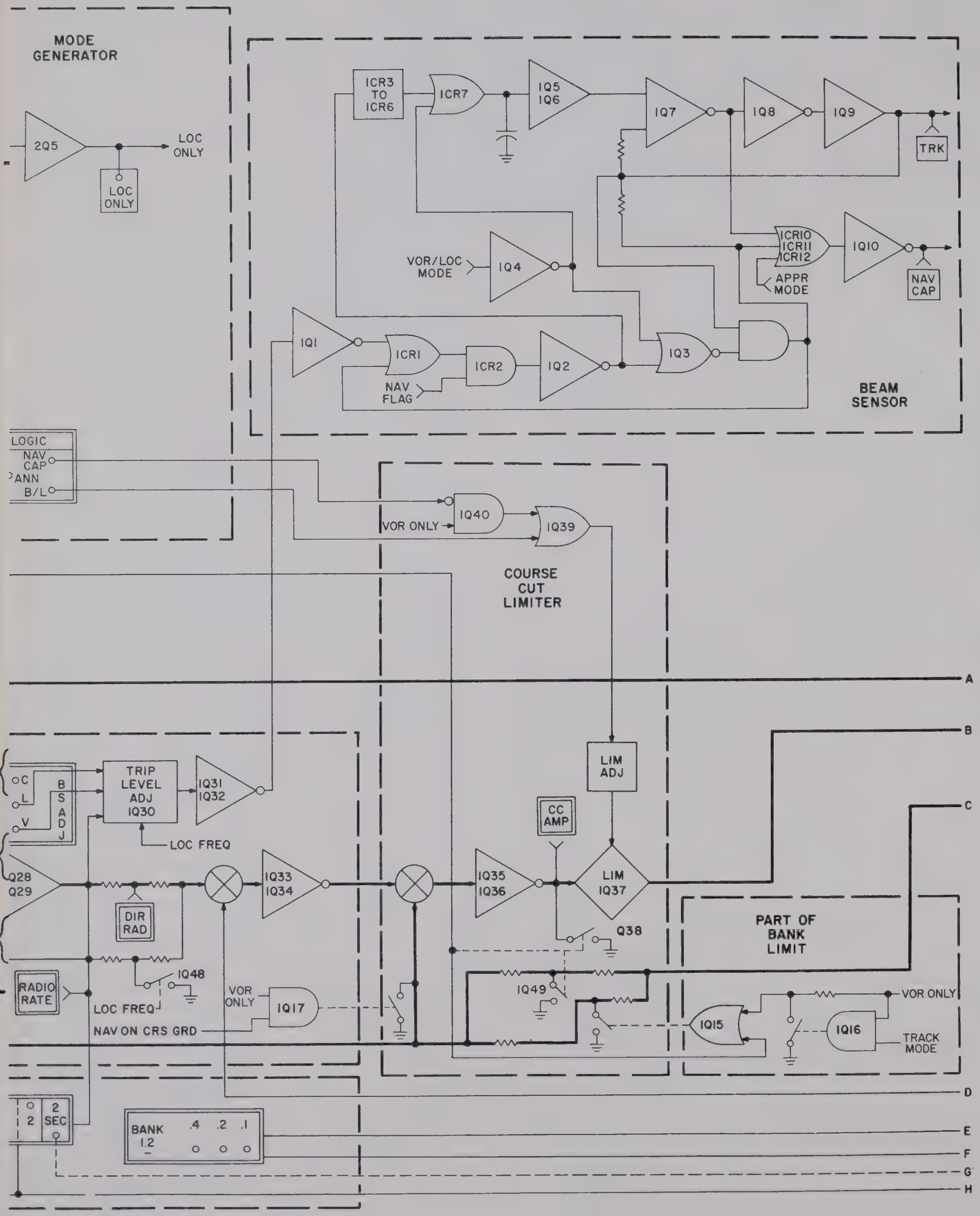

GLIDE SLOPE EXT MODE 39
PART OF PIA
PART OF PIB
APPROACH ON 17
GLIDE SLOPE ON 45
PART OF PIA
LOC FREQ ON 43
PART OF PIB
HEADING MODE 47
VOR/LOC MODE 46
GS EXT
EXT
EXT MODE
APR MODE
APR
NAV ON CRS GRD
2Q39
A B APR ARM
LOC FREQ
LOC
LOC FREQ
2CR89 2CR88
2Q3
2Q1
VOR ONLY
VOR ONLY
2CR14 2CR93 2CR15
2Q6
2Q5
LOC ONLY
LOC ONLY
MODE GENERATOR
HDG
HDG
HDG MODE
NAV ON CRS GRD
2CR22 2CR10
2Q8
2Q2
V/L
HDG LOGIC
HDG ON
CD OFF
B4
HDG V/L
NAV OFF
2Q7
RADIO LOGIC
V/L
NAV CAP
ANN
R/L
B/L
ICR3 TO ICR6
ICR7
IQ5 IQ6
IQ7
IQ8
IQ9
TRK
ICR10 ICR11 ICR12
IQ10
NAV CAP
APPR MODE
VOR/LOC MODE
IQ4
IQ1
ICR1
ICR2
IQ2
IQ3
NAV FLAG
BEAM SENSOR
IQ40
IQ39
VOR ONLY
COURSE CUT LIMITER
PART OF PIA
HEADING ERROR SYNCHRO C2 14
HEADING ERROR SYNCHRO C1 13
HEADING ERROR SYNCHRO C3 15
PART OF PIB
HEADING ERROR SYNCHRO C' 23
HEADING ERROR SYNCHRO H' 33
HDG Z
30
15
10
C
31.6K
14.7K
10K
3Q27
QUAD REJ 3Q42, 3Q43
HDG MV 240+
120
30
60
15
EI
HEADING
A
B
C
RADIO
RADIO IN
VOR/LOC DEV + LEFT 32
VOR/LOC DEV + RIGHT 22
IQ18 CHOPPER IQ19
IQ20 IQ21
IQ22 IQ23
RATE LIM ADJ IQ24 IQ25
LOC FREQ
TRACK MODE
ICR20 LIM ICR23
IQ26 CHOPPER IQ27
IQ28 IQ29
C L V
B S A D J
TRIP LEVEL ADJ IQ30
IQ31 IQ32
LOC FREQ
DIR RAD
IQ33 IQ34
RADIO RATE LIMITER
RADIO RATE
IQ48
LOC FREQ
VOR ONLY
IQ17
NAV ON CRS GRD
LIM ADJ
CC AMP
IQ35 IQ36
LIM IQ37
Q38
IQ49
PART OF BANK LIMIT
IQ15
IQ16
VOR ONLY
TRACK MODE
PART OF PIA
COURSE DATUM SYNCHRO C2 18
COURSE DATUM SYNCHRO C1 17
COURSE DATUM SYNCHRO C3 19
COURSE DATUM SYNCHRO C' 24
COURSE DATUM SYNCHRO H' 34
PART OF PIB
CD Z
30
15
10
C
31.6K
14.7K
10K
QUAD REJ IQ13, IQ14
IQ11 IQ12
CD IN
CD MV 240+
120
300
B3
60
150
COURSE DATUM
RADIO 30
16
8
4
2
2 SEC
1 .5 CD 3.2
RATE GAIN
BANK 1.2
.4 .2 .1
D
E
F
G
H

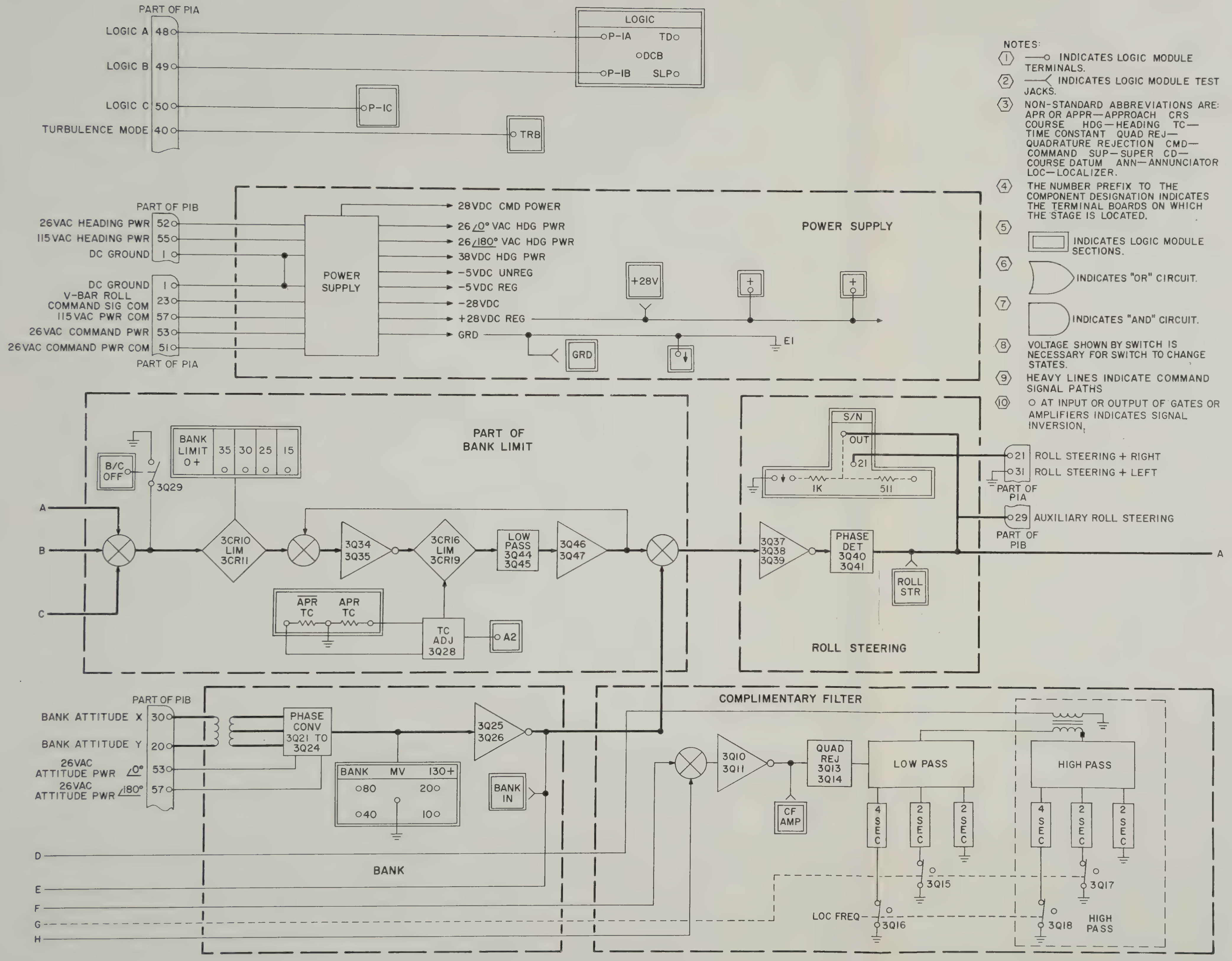
562R-1 Logic Diagram (Sheet 1 of 3)
Figure 7


MODE GENERATOR
2Q5
LOC ONLY
LOC ONLY
ICR3 TO ICR6
ICR7
IQ5 IQ6
IQ7
IQ8
IQ9
TRK
VOR/LOC MODE
IQ4
ICR10 ICR11 ICR12
APPR MODE
IQ10
NAV CAP
IQ1
ICR1
NAV FLAG
ICR2
IQ2
IQ3
BEAM SENSOR
LOGIC
NAV CAP
ANN
B/L
IQ40
VOR ONLY
IQ39
COURSE CUT LIMITER
A
B
C
OC
L
V
B S A D J
TRIP LEVEL ADJ IQ30
IQ31 IQ32
LOC FREQ
LIM ADJ
CC AMP
Q28 Q29
DIR RAD
IQ33 IQ34
IQ35 IQ36
LIM IQ37
Q38
PART OF BANK LIMIT
IQ48
RADIO RATE
LOC FREQ
VOR ONLY
IQ17
NAV ON CRS GRD
IQ49
IQ15
IQ16
VOR ONLY
TRACK MODE
D
2
2 SEC
BANK 1.2
.4 .2 .1
E
F
G
H


PART OF PIA
LOGIC A 48
LOGIC B 49
LOGIC C 50
TURBULENCE MODE 40
LOGIC
P-IA
TD
DCB
P-IB
SLP
P-IC
TRB
PART OF PIB
26VAC HEADING PWR 52
115VAC HEADING PWR 55
DC GROUND 1
DC GROUND 1
V-BAR ROLL COMMAND SIG COM 23
115VAC PWR COM 57
26VAC COMMAND PWR 53
26VAC COMMAND PWR COM 51
PART OF PIA
POWER SUPPLY
28VDC CMD POWER
26∠0° VAC HDG PWR
26∠180° VAC HDG PWR
38VDC HDG PWR
-5VDC UNREG
-5VDC REG
-28VDC
+28VDC REG
GRD
+28V
GRD
E1
POWER SUPP
PART OF BANK LIMIT
BANK LIMIT 0+
35
30
25
15
B/C OFF
3Q29
A
B
C
3CR10 LIM 3CR11
3Q34 3Q35
3CR16 LIM 3CR19
LOW PASS 3Q44 3Q45
3Q46 3Q47
APR TC
APR TC
TC ADJ 3Q28
A2
S/N
OUT
21
1K
3Q37 3Q38 3Q39
PHASE DET 3Q40 3Q41
ROLL STEE
PART OF PIB
BANK ATTITUDE X 30
BANK ATTITUDE Y 20
26VAC ATTITUDE PWR ∠0° 53
26VAC ATTITUDE PWR ∠180° 57
PHASE CONV 3Q21 TO 3Q24
3Q25 3Q26
BANK MV 130+
80
200
40
100
BANK IN
BANK
D
E
F
G
H
COMPLIMENTARY FILTER
3Q10 3Q11
QUAD REJ 3Q13 3Q14
CF AMP
4 SEC
LOC FREQ

562R-1 Logic Diagram (Sheet 2 of 3)
Figure 7


MODE
GENERATOR
2Q5
LOC
ONLY
LOC
ONLY
ICR3
TO
ICR6
ICR7
IQ5
IQ6
IQ7
IQ8
IQ9
TRK
ICR10
ICR11
ICR12
IQ10
NAV
CAP
APPR
MODE
VOR/LOC
MODE
IQ4
IQ1
ICR1
ICR2
IQ2
IQ3
NAV
FLAG
BEAM
SENSOR
LOGIC
NAV
CAP
ANN
B/L
IQ40
VOR ONLY
IQ39
COURSE
CUT
LIMITER
A
B
C
LIM
ADJ
CC
AMP
TRIP
LEVEL
ADJ
IQ30
IQ31
IQ32
OC
L
V
B
S
ADJ
LOC FREQ
Q28
Q29
IQ33
IQ34
IQ35
IQ36
LIM
IQ37
Q38
DIR
RAD
IQ48
RADIO
RATE
LOC FREQ
VOR
ONLY
IQ17
NAV ON CRS GRD
IQ49
PART OF
BANK
LIMIT
IQ15
IQ16
VOR ONLY
TRACK
MODE
D
2
2
SEC
BANK
1.2
.4
.2
.1
E
F
G
H


PART OF PIA
LOGIC A 48
LOGIC B 49
LOGIC C 50
TURBULENCE MODE 40
LOGIC
P-IA
TD
DCB
P-IB
SLP
P-IC
TRB
PART OF PIB
26VAC HEADING PWR 52
115VAC HEADING PWR 55
DC GROUND 1
DC GROUND 1
V-BAR ROLL COMMAND SIG COM 23
115VAC PWR COM 57
26VAC COMMAND PWR 53
26VAC COMMAND PWR COM 51
PART OF PIA
POWER SUPPLY
28VDC CMD POWER
26∠0° VAC HDG PWR
26∠180° VAC HDG PWR
38VDC HDG PWR
-5VDC UNREG
-5VDC REG
-28VDC
+28VDC REG
GRD
+28V
+
+
GRD
E1
POWER SUPPLY
B/C OFF
3Q29
BANK LIMIT 0+
35
30
25
15
PART OF BANK LIMIT
A
B
C
3CR10 LIM 3CR11
3Q34 3Q35
3CR16 LIM 3CR19
LOW PASS 3Q44 3Q45
3Q46 3Q47
APR TC
APR TC
TC ADJ 3Q28
A2
S/N
OUT
21
1K
511
3Q37 3Q38 3Q39
PHASE DET 3Q40 3Q41
ROLL STR
ROLL STEERING
21 ROLL STEERING + RIGHT
31 ROLL STEERING + LEFT
PART OF PIA
29 AUXILIARY ROLL STEERING
PART OF PIB
A
PART OF PIB
BANK ATTITUDE X 30
BANK ATTITUDE Y 20
26VAC ATTITUDE PWR ∠0° 53
26VAC ATTITUDE PWR ∠180° 57
PHASE CONV 3Q21 TO 3Q24
3Q25 3Q26
BANK MV 130+
80
200
40
100
BANK IN
BANK
D
E
F
G
H
COMPLIMENTARY FILTER
3Q10 3Q11
CF AMP
QUAD REJ 3Q13 3Q14
LOW PASS
HIGH PASS
4 SEC
2 SEC
2 SEC
4 SEC
2 SEC
2 SEC
3Q15
3Q17
LOC FREQ
3Q16
3Q18
HIGH PASS

NOTES:

① ——o INDICATES LOGIC MODULE TERMINALS.

② ——< INDICATES LOGIC MODULE TEST JACKS.

③ NON-STANDARD ABBREVIATIONS ARE: APR OR APPR—APPROACH CRS COURSE HDG—HEADING TC—TIME CONSTANT QUAD REJ—QUADRATURE REJECTION CMD—COMMAND SUP—SUPER CD—COURSE DATUM ANN—ANNUNCIATOR LOC—LOCALIZER.

④ THE NUMBER PREFIX TO THE COMPONENT DESIGNATION INDICATES THE TERMINAL BOARDS ON WHICH THE STAGE IS LOCATED.

⑤ INDICATES LOGIC MODULE SECTIONS.

⑥ INDICATES "OR" CIRCUIT.

⑦ INDICATES "AND" CIRCUIT.

⑧ VOLTAGE SHOWN BY SWITCH IS NECESSARY FOR SWITCH TO CHANGE STATES.

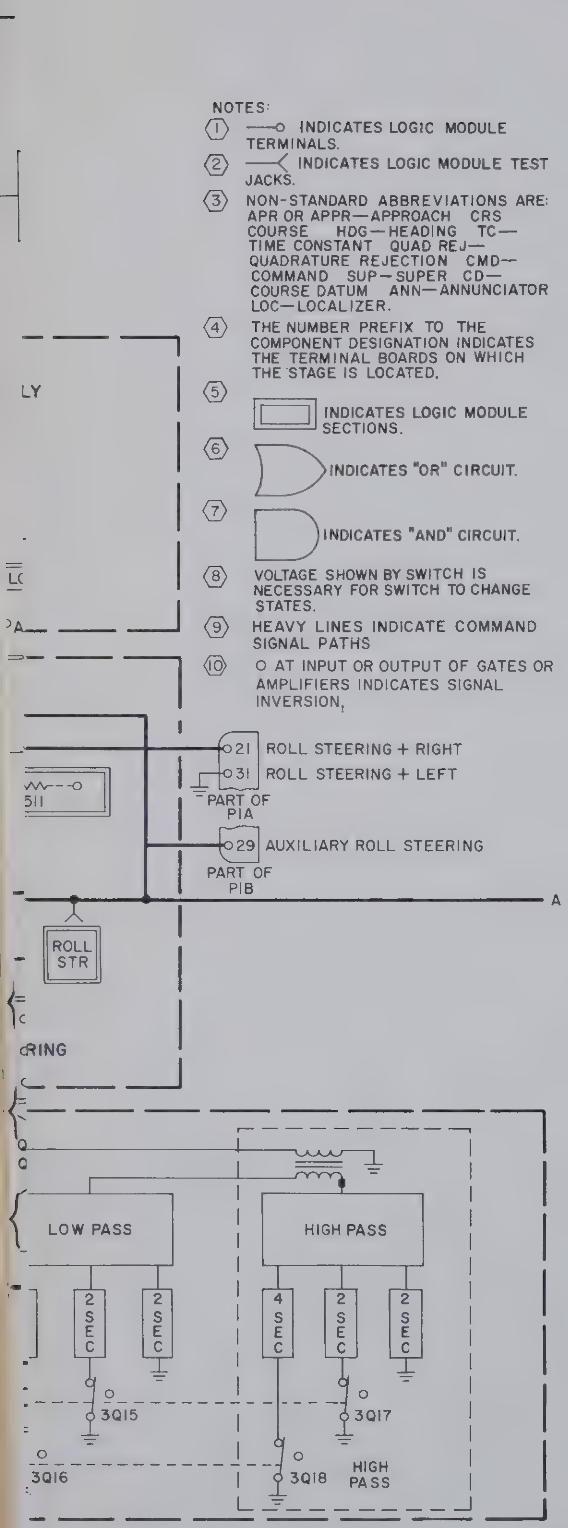
⑨ HEAVY LINES INDICATE COMMAND SIGNAL PATHS

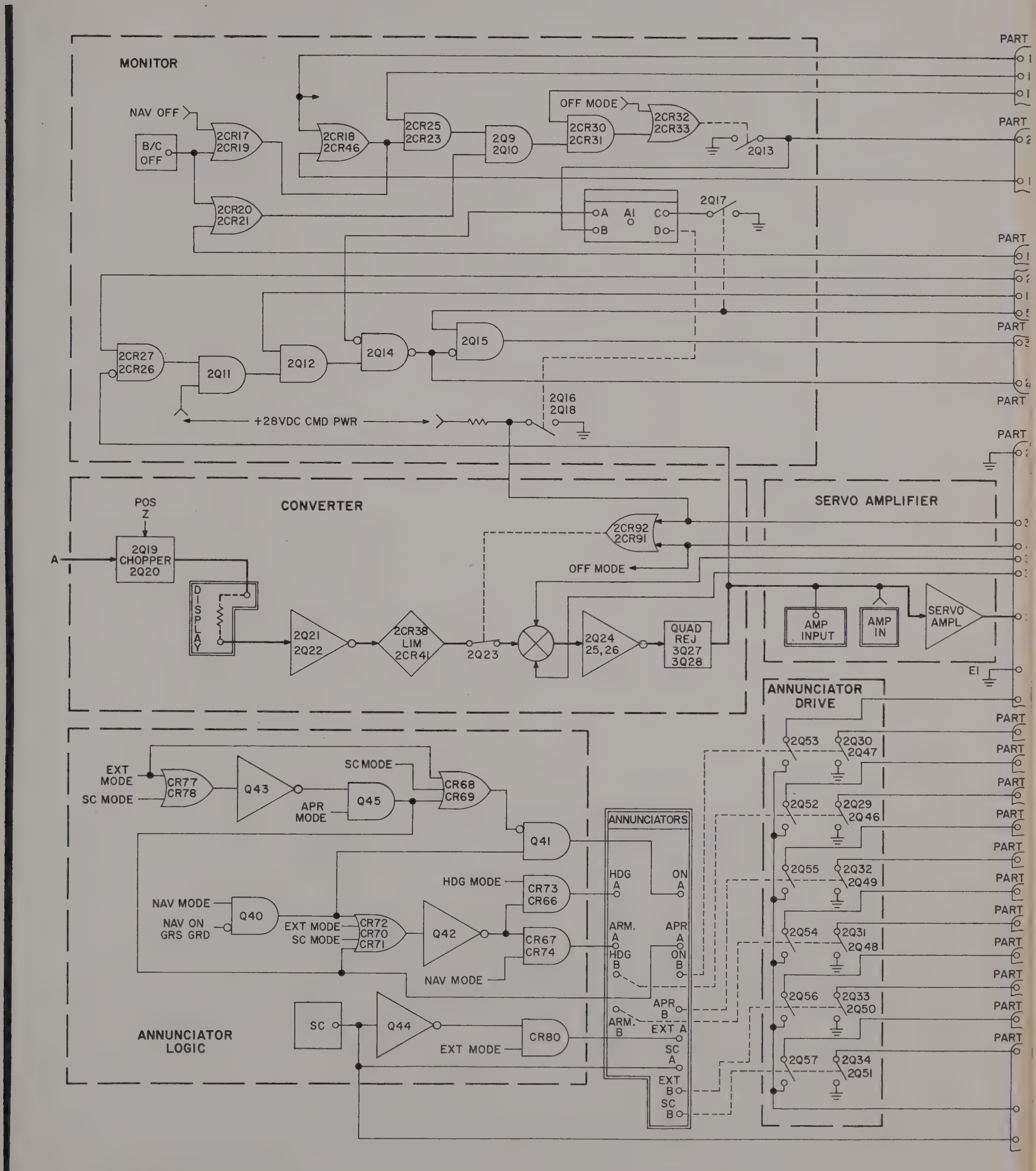
⑩ O AT INPUT OR OUTPUT OF GATES OR AMPLIFIERS INDICATES SIGNAL INVERSION.

562R-1 Logic Diagram (Sheet 2 of 3)
Figure 7

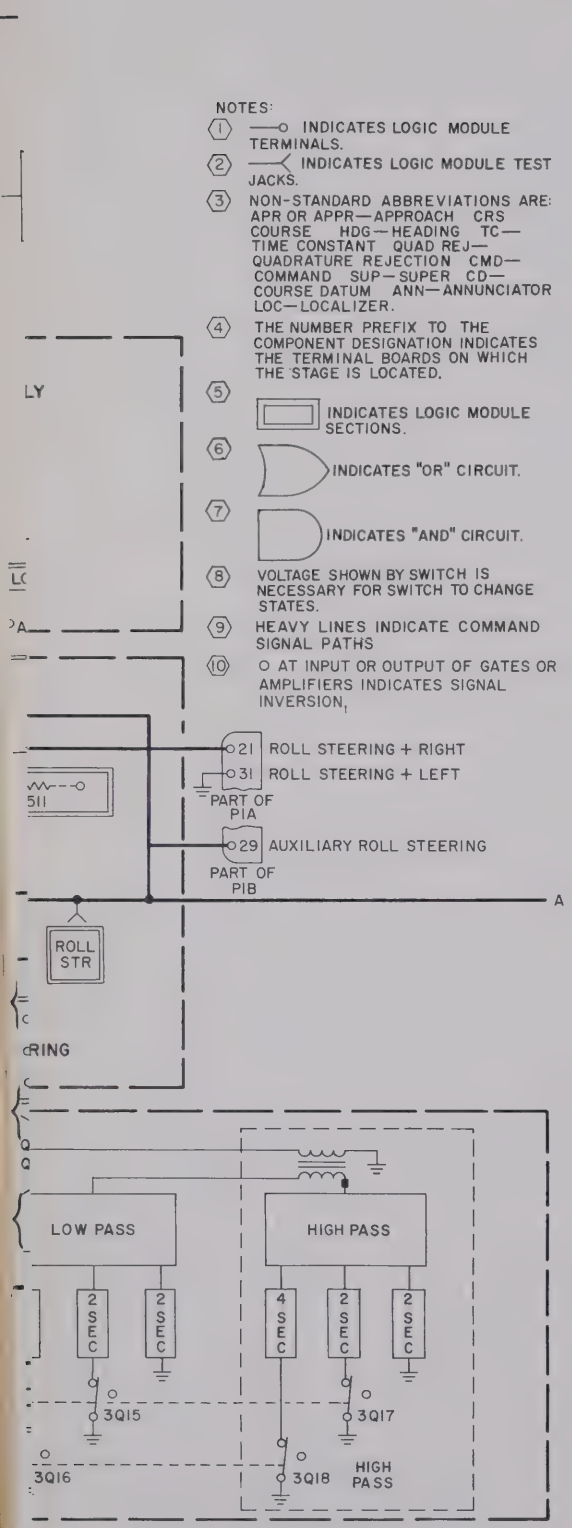
NOTES:

1. —o INDICATES LOGIC MODULE TERMINALS.
2. —< INDICATES LOGIC MODULE TEST JACKS.
3. NON-STANDARD ABBREVIATIONS ARE: APR OR APPR—APPROACH CRS COURSE HDG—HEADING TC—TIME CONSTANT QUAD REJ—QUADRATURE REJECTION CMD—COMMAND SUP—SUPER CD—COURSE DATUM ANN—ANNUNCIATOR LOC—LOCALIZER.
4. THE NUMBER PREFIX TO THE COMPONENT DESIGNATION INDICATES THE TERMINAL BOARDS ON WHICH THE STAGE IS LOCATED.
5. ▭ INDICATES LOGIC MODULE SECTIONS.
6. INDICATES "OR" CIRCUIT.
7. INDICATES "AND" CIRCUIT.
8. VOLTAGE SHOWN BY SWITCH IS NECESSARY FOR SWITCH TO CHANGE STATES.
9. HEAVY LINES INDICATE COMMAND SIGNAL PATHS
10. ○ AT INPUT OR OUTPUT OF GATES OR AMPLIFIERS INDICATES SIGNAL INVERSION.


LY
LC
A
21 ROLL STEERING + RIGHT
31 ROLL STEERING + LEFT
511
PART OF PIA
29 AUXILIARY ROLL STEERING
PART OF PIB
A
ROLL STR
RING
LOW PASS
HIGH PASS
2 SEC
2 SEC
4 SEC
2 SEC
2 SEC
3Q15
3Q17
3Q16
3Q18
HIGH PASS


MONITOR
NAV OFF
B/C OFF
2CR17
2CR19
2CR20
2CR21
2CR18
2CR46
2CR25
2CR23
2Q9
2Q10
OFF MODE
2CR30
2CR31
2CR32
2CR33
2Q13
2Q17
A
B
A1
C
D
2CR27
2CR26
2Q11
2Q12
2Q14
2Q15
+28VDC CMD PWR
2Q16
2Q18
PART
CONVERTER
POS
Z
A
2Q19
CHOPPER
2Q20
DISPLAY
2Q21
2Q22
2CR38
LIM
2CR41
2Q23
2Q24
25, 26
QUAD
REJ
3Q27
3Q28
2CR92
2CR91
OFF MODE
SERVO AMPLIFIER
AMP
INPUT
AMP
IN
SERVO
AMPL
E1
ANNUNCIATOR LOGIC
EXT
MODE
SC MODE
CR77
CR78
Q43
SC MODE
APR
MODE
Q45
CR68
CR69
Q41
HDG MODE
CR73
CR66
NAV MODE
NAV ON
GRS GRD
Q40
EXT MODE
SC MODE
CR72
CR70
CR71
Q42
CR67
CR74
NAV MODE
SC
Q44
EXT MODE
CR80
ANNUNCIATORS
HDG
A
ON
A
ARM.
A
APR
A
HDG
B
ON
B
APR
B
ARM.
B
EXT A
SC
A
EXT
B
SC
B
ANNUNCIATOR
DRIVE
2Q53
2Q30
2Q47
2Q52
2Q29
2Q46
2Q55
2Q32
2Q49
2Q54
2Q31
2Q48
2Q56
2Q33
2Q50
2Q57
2Q34
2Q51

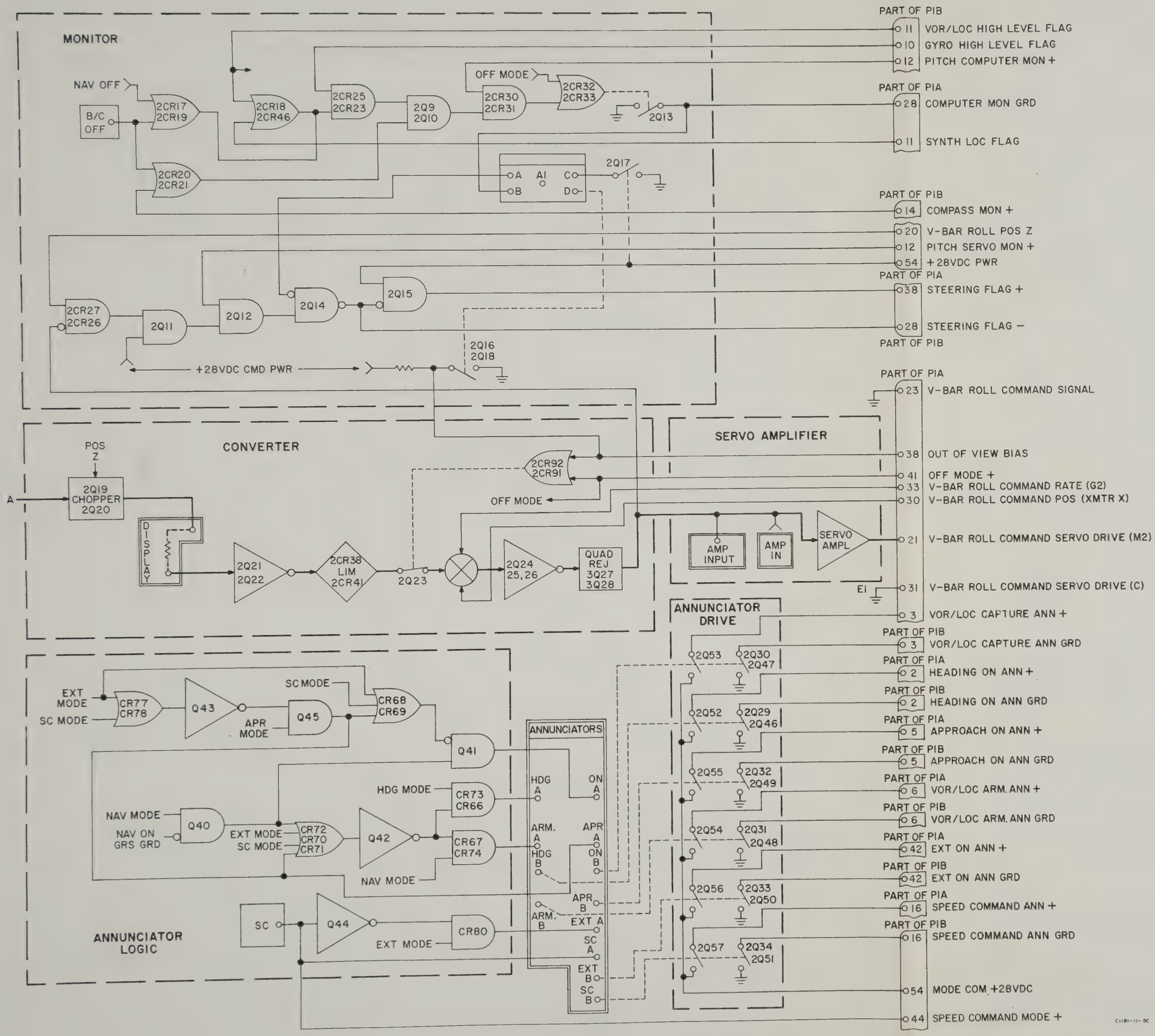
562R-1 Logic Diagram (Sheet 3 of 3)
Figure 7



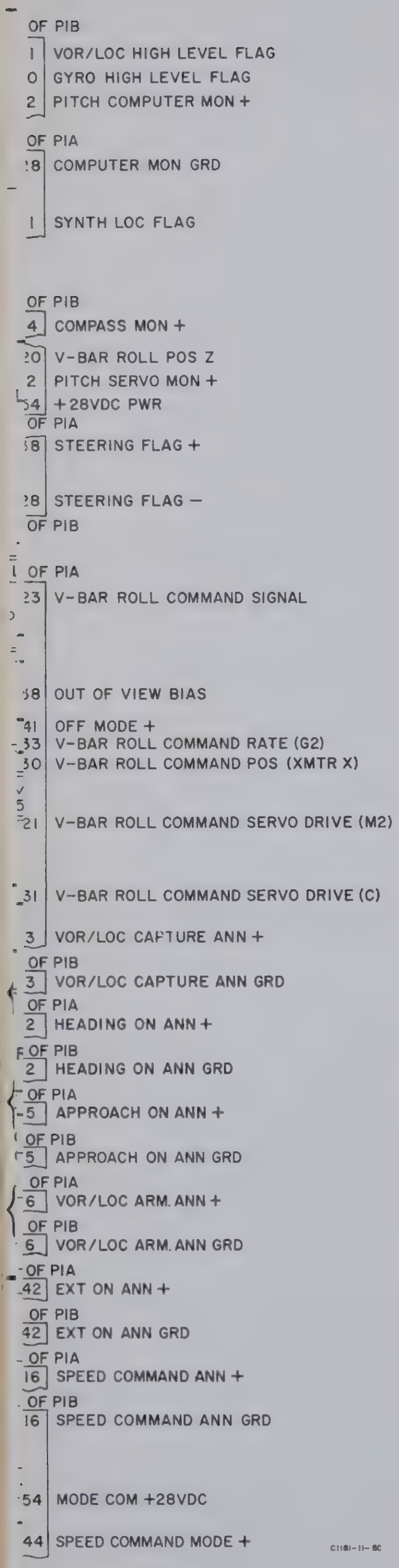
NOTES:

1. —o INDICATES LOGIC MODULE TERMINALS.
2. —< INDICATES LOGIC MODULE TEST JACKS.
3. NON-STANDARD ABBREVIATIONS ARE: APR OR APPR—APPROACH CRS COURSE HDG—HEADING TC—TIME CONSTANT QUAD REJ—QUADRATURE REJECTION CMD—COMMAND SUP—SUPER CD—COURSE DATUM ANN—ANNUNCIATOR LOC—LOCALIZER.
4. THE NUMBER PREFIX TO THE COMPONENT DESIGNATION INDICATES THE TERMINAL BOARDS ON WHICH THE STAGE IS LOCATED.
5. INDICATES LOGIC MODULE SECTIONS.
6. INDICATES "OR" CIRCUIT.
7. INDICATES "AND" CIRCUIT.
8. VOLTAGE SHOWN BY SWITCH IS NECESSARY FOR SWITCH TO CHANGE STATES.
9. HEAVY LINES INDICATE COMMAND SIGNAL PATHS
10. o AT INPUT OR OUTPUT OF GATES OR AMPLIFIERS INDICATES SIGNAL INVERSION.

LY
LC
PA
21 ROLL STEERING + RIGHT
31 ROLL STEERING + LEFT
PART OF PIA
29 AUXILIARY ROLL STEERING
PART OF PIB
A
511
ROLL STR
RING
LOW PASS
HIGH PASS
2 SEC
2 SEC
4 SEC
2 SEC
2 SEC
3Q15
3Q17
3Q16
3Q18
HIGH PASS


MONITOR
NAV OFF
B/C OFF
2CR17 2CR19
2CR18 2CR46
2CR25 2CR23
2Q9 2Q10
OFF MODE
2CR30 2CR31
2CR32 2CR33
2Q13
2CR20 2CR21
A AI C
B D
2Q17
2CR27 2CR26
2Q11
2Q12
2Q14
2Q15
2Q16 2Q18
+28VDC CMD PWR
PART OF PIB
11 VOR/LOC HIGH LEVEL FLAG
10 GYRO HIGH LEVEL FLAG
12 PITCH COMPUTER MON +
PART OF PIA
28 COMPUTER MON GRD
11 SYNTH LOC FLAG
PART OF PIB
14 COMPASS MON +
20 V-BAR ROLL POS Z
12 PITCH SERVO MON +
54 +28VDC PWR
PART OF PIA
38 STEERING FLAG +
28 STEERING FLAG −
PART OF PIB
PART OF PIA
23 V-BAR ROLL COMMAND SIGNAL
CONVERTER
POS Z
A
2Q19 CHOPPER 2Q20
DISPLAY
2Q21 2Q22
2CR38 LIM 2CR41
2Q23
2CR92 2CR91
OFF MODE
2Q24 25,26
QUAD REJ 3Q27 3Q28
SERVO AMPLIFIER
AMP INPUT
AMP IN
SERVO AMPL
38 OUT OF VIEW BIAS
41 OFF MODE +
33 V-BAR ROLL COMMAND RATE (G2)
30 V-BAR ROLL COMMAND POS (XMTR X)
21 V-BAR ROLL COMMAND SERVO DRIVE (M2)
E1
31 V-BAR ROLL COMMAND SERVO DRIVE (C)
3 VOR/LOC CAPTURE ANN +
ANNUNCIATOR DRIVE
2Q53
2Q30 2Q47
2Q52
2Q29 2Q46
2Q55
2Q32 2Q49
2Q54
2Q31 2Q48
2Q56
2Q33 2Q50
2Q57
2Q34 2Q51
PART OF PIB
3 VOR/LOC CAPTURE ANN GRD
PART OF PIA
2 HEADING ON ANN +
PART OF PIB
2 HEADING ON ANN GRD
PART OF PIA
5 APPROACH ON ANN +
PART OF PIB
5 APPROACH ON ANN GRD
PART OF PIA
6 VOR/LOC ARM. ANN +
PART OF PIB
6 VOR/LOC ARM. ANN GRD
PART OF PIA
42 EXT ON ANN +
PART OF PIB
42 EXT ON ANN GRD
PART OF PIA
16 SPEED COMMAND ANN +
PART OF PIB
16 SPEED COMMAND ANN GRD
54 MODE COM +28VDC
44 SPEED COMMAND MODE +
EXT MODE
SC MODE
CR77 CR78
Q43
SC MODE
APR MODE
Q45
CR68 CR69
Q41
HDG MODE
CR73 CR66
NAV MODE
NAV ON GRS GRD
Q40
EXT MODE
SC MODE
CR72 CR70 CR71
Q42
CR67 CR74
NAV MODE
SC
Q44
EXT MODE
CR80
ANNUNCIATOR LOGIC
ANNUNCIATORS
HDG A
ON A
ARM. A
APR A
HDG B
ON B
APR B
ARM. B
EXT A
SC A
EXT B
SC B
C11181-11-SC

562R-1 Logic Diagram (Sheet 3 of 3)
Figure 7


OF PIB
1 VOR/LOC HIGH LEVEL FLAG
0 GYRO HIGH LEVEL FLAG
2 PITCH COMPUTER MON +
OF PIA
8 COMPUTER MON GRD
1 SYNTH LOC FLAG
OF PIB
4 COMPASS MON +
20 V-BAR ROLL POS Z
2 PITCH SERVO MON +
54 +28VDC PWR
OF PIA
8 STEERING FLAG +
8 STEERING FLAG —
OF PIB
OF PIA
23 V-BAR ROLL COMMAND SIGNAL
8 OUT OF VIEW BIAS
41 OFF MODE +
33 V-BAR ROLL COMMAND RATE (G2)
30 V-BAR ROLL COMMAND POS (XMTR X)
21 V-BAR ROLL COMMAND SERVO DRIVE (M2)
31 V-BAR ROLL COMMAND SERVO DRIVE (C)
3 VOR/LOC CAPTURE ANN +
OF PIB
3 VOR/LOC CAPTURE ANN GRD
OF PIA
2 HEADING ON ANN +
OF PIB
2 HEADING ON ANN GRD
OF PIA
5 APPROACH ON ANN +
OF PIB
5 APPROACH ON ANN GRD
OF PIA
6 VOR/LOC ARM. ANN +
OF PIB
6 VOR/LOC ARM. ANN GRD
OF PIA
42 EXT ON ANN +
OF PIB
42 EXT ON ANN GRD
OF PIA
16 SPEED COMMAND ANN +
OF PIB
16 SPEED COMMAND ANN GRD
54 MODE COM +28VDC
44 SPEED COMMAND MODE +
C1181-11-8C

562R-1 Roll Steering Computer - Disassembly

1. GENERAL.

This section contains instructions for removing components and parts from the roll steering computer.

2. DUST COVER REMOVAL.

Remove the holddown screw located at the rear of the roll steering computer dust cover. Slide the chassis out of the dust cover by pulling the chassis forward.

3. COMPONENT REMOVAL.

A. General.

(1) Mark or otherwise identify all disconnected electrical wiring. Make note of color coding, placement of lead wires, and method of applying insulation (if any) before unsoldering or removing any electrical components.

(2) Disassemble the roll steering computer only as far as required to repair or replace a part.

NOTE: When removing a transistor or diode, grasp with long-nosed pliers the lead to which heat is being applied between the solder joint and the transistor or diode The pliers will serve as a heat sink which will remove much of the heat, ordinarily conducted to the transistor or diode, from the soldering iron.

B. Logic Module Removal.

Remove the four screws from the corners of the logic module, and carefully pull the module away from the chassis.

NOTE: The logic module may be removed without removing the entire dust cover by opening the cover on the front of the unit, removing four screws from the logic module, and pulling the module away from the chassis.

C. Terminal Board Removal.

To remove either outer terminal board, loosen the three standoffs positioned along the centerline of the terminal board. Loosen the screws on the outside edges of the terminal board. Pull the terminal board away from the chassis by means of the nylon straps at the bottom edge of the board.

NOTE: The center terminal board forms the chassis of the roll steering computer.

562R-1 Roll Steering Computer - Cleaning

1. GENERAL.

This section contains instructions for cleaning the roll steering computer.

2. DUST COVER CLEANING.

A. Remove bulk of dust and grease with a cloth.

B. Immerse the dust cover in a washing bath of solvent, and scrub with a brush until the cover is clean. Raise the cover from the bath, and allow the solvent to drain off.

C. Immerse the dust cover in a rinsing bath of clean solvent. Allow the cover to drain dry.

3. CHASSIS AND ELECTRICAL COMPONENT CLEANING.

A. Remove dust, dirt, and other foreign matter from all surfaces, including parts and wiring, by using a small brush in conjunction with an air jet.

WARNING: WEAR GOGGLES WHEN USING THE AIR JET. WARN OTHER PERSONS AWAY FROM THE HAZARDOUS AREA.

B. Wipe the finished surfaces with a solvent-moistened cloth. Dry immediately with a clean cloth.

CAUTION: EXERCISE CARE IN WIPING THE SOLVENT FROM COMPONENTS AS THEIR COLOR CODING OR SILK SCREENING MAY BE REMOVED.

NOTE: When necessary to disturb the dress of wiring and cables, restore to proper position after cleaning.

4. CONNECTOR CLEANING.

A. Wipe dust and dirt from bodies, shells, and cable clamps, using a solvent-moistened lintless cloth. Wipe dry with a clean, dry lintless cloth.

B. Remove dust from inserts, using a small, soft-bristled brush in conjunction with an air jet.

C. Wash dirt and any traces of lubricant from the insert, insulation, and contacts with solvent applied sparingly with a small camel-hair brush.

CAUTION: DO NOT ALLOW SOLVENT TO RUN INTO SLEEVES OR CONDUIT COVERING ANY WIRES OR CABLES CONNECTED TO CONTACT TERMINALS OF THE INSERT.

D. Dry the insert with an air jet.

562R-1 Roll Steering Computer - Inspection/Check

1. GENERAL.

This section contains instructions to assist in determining, by inspection, the condition of the cleaned roll steering computer. Defects resulting from wear, physical damage, corrosion, or other causes are found by these inspection procedures.

2. DUST COVER.

Examine the dust cover, front plate, and nameplate for deformation, dents, and scratched or badly worn surfaces. Also check for damaged screwheads.

3. CHASSIS.

Check for physical damage or deformation. Check for corrosion and any damage that would require replating or refinishing. Check for broken welds and loose screws.

4. CONNECTORS.

Examine the connector body for breaks, deformed shell, or other abnormal conditions. Check for cracked insulation and for contacts which are broken, deformed, or out of alignment. Examine for damaged plating on contacts and for loose, poorly soldered, or corroded terminal connections.

5. RESISTORS.

Check for cracked, broken, blistered, or charred bodies and for loose, poorly soldered, or corroded terminal connections.

6. CAPACITORS.

Check for cracked, broken, blistered, or charred bodies and for loose, broken, poorly soldered, or corroded terminal connections. Check leads into disc ceramic capacitors for tightness.

7. WIRING.

Check all wiring for physical damage and charring. Check lead dress in relation to chassis and to other wiring and components.

562R-1 Roll Steering Computer - Repair

1. GENERAL.

The repair or replacement of damaged parts in the roll steering computer is largely an uncomplicated matter involving standard techniques. However, the following techniques should be observed.

2. CHASSIS SERVICING TECHNIQUES.

Whenever maintenance is performed on the chassis cabling of this equipment, a check should be made to be certain that the cable is still wired correctly. This may be done by continuity checks throughout the cable. See the testing section of this manual.

3. COMPONENT SERVICING TECHNIQUES.

Capacitors which are suspected of being faulty, or new capacitors which are installed in the equipment, should be checked for proper values of insulation resistance.

Use a heat-sink when installing or removing a soldered-in transistor.

It is recommended that transistor testers be used to evaluate transistors.

562R-1 Roll Steering Computer - Assembly

1. GENERAL.

This section contains instructions for assembling components and parts of the roll steering computer.

2. COMPONENT ASSEMBLY.

A. General.

Before soldering any electrical components, make note of color coding, placement of lead wires, and wire insulation (if any).

B. Terminal Board Assembly.

To assemble either outer terminal board to the chassis, position the terminal board on the chassis and SECURELY mate the connectors. Secure with screws around the outer edge of the terminal board. Secure the three standoffs along the centerline of the terminal board.

C. Logic Module Assembly.

Mate connector P2 on the logic module with connector J2 on the front of the unit. Secure the module to the chassis with four screws in the corners of the module.

3. DUST COVER REPLACEMENT.

Slide the chassis into the dust cover. Secure the dust cover by replacing the screw located on the rear of the dust cover.

562R-1 Roll Steering Computer - Fits and Clearances

1. GENERAL.

No special fits and clearances need be observed for assembly of the roll steering computer.

562R-1 Roll Steering Computer -Testing

1. INTRODUCTION.

This section provides information for testing and locating troubles in the roll steering computer.

The test procedure is presented in tabular form to provide a clear, easily used presentation. The test procedure includes test name, test equipment settings, equipment settings, procedure, result, and any notes which may be of aid.

If the roll steering computer fails to meet the specification of a particular test, refer to the troubleshooting section.

Figure 701 provides testing information on the roll steering computer from signal inputs to the steering needle output. Figure 702 provides testing information for the converter and servo-amplifier section. Refer to figures 703 and 704 for information concerning interconnecting cables. The cables must be fabricated by the user.

A. Test Equipment.

Refer to figure 1001 for test equipment required to test the roll steering computer.

B. Power Source(s).

Refer to figure 1001 for information concerning the power sources required.

2. TEST PROCEDURES.

A. Use of Test Procedure.

(1) Each step of the test procedures is printed on a separate page and numbered consecutively. Where additional pages are required for a particular test, they are printed on the following page with an A or B suffix.

(2) The status number of the equipment to which a particular test applies is contained in the procedure column at the beginning of each test.

(3) The test procedures contain all the necessary information to perform a complete test using available test equipment (procedure 1) and tests performed when using test equipment manufactured by Collins Radio Company (procedure 2).

(4) When any block under test settings is empty, the control has been set properly in a previous step and does not have to be changed.

(5) All switch positions are repeated at the top of each page for reference.

(6) The result column provides the expected results for both in-phase and out-of-phase signal conditions.

(7) Performing a complete test requires that all steps of the procedure be completed first for the in-phase signal conditions and then for the out-of-phase signal conditions, except in tests where both in-phase and out-of-phase information is supplied.

(8) Proper phasing of ac signals is achieved by having the input signal in phase or out of phase with the power between P1B-55 and P1A-57. For in-phase conditions, the input signal of the higher numbered pin is in phase with P1B-55. For out-of-phase conditions, the input signal on the higher numbered pin is out of phase with P1B-55.

(9) Proper phasing of dc signals is achieved by having in-phase signals positive on the lower numbered pin and out-of-phase signals negative on the lower numbered pin.

(10) On the 978F-5R test set, the out-of-phase ac tests are made with the phase selector in the Ø1 position. Out-of-phase dc input signals appear negative (left deflection) on the DC INPUT METER.

(11) Out-of-phase tests on the servo amplifier are not required.

(12) The dc mode volts required for the steps of procedure 1 test instructions is +28 ±3 volts dc.

(13) Refer to the troubleshooting section for further information concerning testing.

(14) Complete all tests in the table before doing any troubleshooting. It will be possible to isolate many problems directly from the test procedures.

(15) Figure 702 test procedures do not change with status change of the equipment.

STEP/TEST	PROCEDURE 1			PROCEDURE 2													13
				978F-5R TEST SETTINGS								978F-10R TEST SETTINGS					
									LOGIC SELECTOR			MODE SELECTORS					
	PROCEDURE	INPUT	RESULT	DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	TEST	GAIN	MONITOR SELECTOR	APPR OVERIDE	TURB	GS EXT	ROLL STEER	PROCEDURE	RESULT
0-1 Test Setup	Connect dc ground to P1B-1 and P1B-31: connect +28 vdc to P1A-54; connect 115 v 400-cps power (cold) to P1A-57, (hot) to P1B-55; connect jumper between P1B-52 and -53. Jumper P1B-57 to AC common.			OFF	OFF	OFF	ROLL STEER	1 VDC	4	1	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	Remove jumper between 511 Ω and ground on logic module; connect test set to unit under test. 978F-5R initial control settings: LOAD SELECTOR to 500, PHASE SELECTOR to ϕ2. HDG B/L to OFF. 978F-10R initial control settings: LOAD SELECTORS to NORMAL. Place the POWER switch on the 978F-5R ON. Observe the POWER lights on the 978F-10R to be on.	
1-0 Dc power and amplifier bias test	For status 001, 003, 005, 006, 007, 009, 011, 012, 015, 017, 018, 021																
1-1	Measure voltage at BANK IN test jack		13.5 ±1.5 vdc				BANK IN	50 VDC								Observe OUTPUT METER.	13.5 ±1.5 vdc
1-2	Measure voltage at CD IN test jack		13.5 ±1.5 vdc				CD IN									Observe OUTPUT METER.	13.5 ±1.5 vdc
1-3	Measure voltage at RADIO IN test jack		13.5 ±1.5 vdc														
1-4	Measure voltage at CC AMP test jack		13.5 ±1.5 vdc				CC AMP									Observe OUTPUT METER.	13.5 ±1.5 vdc
1-5	Measure voltage at CF AMP test jack		13.5 ±1.5 vdc				CF IN		2							Observe OUTPUT METER.	13.5 ±1.5 vdc

562R-1 Testing (Sheet 1 of 28)
Figure 701

STEP/TEST	PROCEDURE 1			PROCEDURE 2													
				978F-5R TEST SETTINGS								978F-10R TEST SETTINGS					
	PROCEDURE	INPUT	RESULT	DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER	PROCEDURE	RESULT
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				OFF	OFF	OFF	CF IN	50 VDC	2	1	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL		
2-0 Roll steer standoff test	For status 001, 003, 005, 006, 007, 009, 011, 012, 015, 017, 018, 021																
2-1	Apply dc mode voltage to P1B-44 and measure voltage between P1B-21 and -31 (grnd).		0 ±0.025 vdc			SC	ROLL STEER	.1 VDC	1							Observe OUTPUT METER	0 ±0.025 vdc

562R-1 Testing (Sheet 2 of 28)
Figure 701

STEP/TEST	PROCEDURE 1			PROCEDURE 2													
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				OFF	OFF	SC	ROLL STEER	.1 VDC	1	1	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL		
3-0 Bank Gain test	For status 001, 003, 005, 006, 007, 009, 011, 012, 015, 017, 018, 021																
3-1	Apply input between P1B-30(com) and P1B-20; read output between P1B-21 and -31.	2.0 vac	-0.660 +0.066 vdc		BANK			1 VDC								Adjust AC INPUT AMPLITUDE for an external ac vtvm reading of 2.0 vac Observe OUTPUT METER.	 -0.660 ±0.066 vdc
3-2	Apply input between P1B-30 and P1B-20; read output between P1A-29 and P1B-31.	2.0 vac	-0.660 ±0.066 vdc												AUX	Observe OUTPUT METER.	-0.660 ±0.066 vdc

562R-1 Testing (Sheet 3 of 28)
Figure 701

STEP/TEST	PROCEDURE 1			PROCEDURE 2													
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR TEST	LOGIC SELECTOR GAIN	MONITOR SELECTOR	MODE SELECTORS APPR OVERIDE	MODE SELECTORS TURB	MODE SELECTORS GS EXT	ROLL STEER		
				OFF	BANK	SC	ROLL STEER	1 VDC	1	1	NORMAL	NORMAL	NORMAL	NORMAL	AUX.		
4-0 VOR 8 second filter test	For status 001, 003, 005, 006, 007, 009, 011, 012, 015, 017, 018, 021																
4-1	Connect the ac vtvm between the CC AMP test jack and ground. Remove the mode voltage from P1B-44 and apply it to P1B-46. Remove ac input from P1B-30 and P1B-20. Allow the CC AMP output to stabilize. Apply ac input between P1B-34 and P1B-24 (com) and at the same time start the stopwatch. Stop the stopwatch when the CC AMP output between CC AMP test jack and ground reaches a maximum.	1.0 vac	Stopwatch should indicate 8 ±3 sec		OFF	VOR	CC AMP	1 VAC							NORM	Adjust AC INPUT AMPLITUDE until the external ac vtvm indicates 1 vac. Allow the OUTPUT METER to stabilize, then set INPUT SELECTOR to COURSE DATUM and at the same time start the stopwatch. Stop the stopwatch when the OUTPUT METER reaches a maximum.	Stopwatch should indicate 8 ±3 sec

562R-1 Testing (Sheet 4 of 28)
Figure 701

STEP/TEST	PROCEDURE 1			PROCEDURE 2													17
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				OFF	COURSE DATUM	VOR	CC AMP	1 VAC	1	1	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL		
5-0 LOCAPPR 4 second filter test	For status 003, 005, 009, 011, 012, 015, 017, 018, 021																
5-1	Apply mode voltage to P1A-43. Remove ac input from P1B-34 and P1B-24. Allow the CC AMP output to stabilize. Apply ac input between P1B-34 and P1B-24 and at the same time start the stopwatch. Stop the stopwatch when the CC AMP output between CC AMP test jack and ground each as a maximum.	1.0 vac	Stopwatch should indicate 4 ±2 sec.		OFF	LOC										Adjust AC INPUT AMPLITUDE until the external ac vtvm indicates 1 vac. Allow the OUTPUT METER to stabilize, then set INPUT SELECTOR to COURSE DATUM and at the same time start the stopwatch. Stop the stopwatch when the OUTPUT METER reaches a maximum.	Stopwatch should indicate 4 ±2 sec
5-2	Apply mode voltage to P1B-17. Remove ac input from P1B-34 and P1B-24. Allow the CC AMP output to stabilize. Apply ac input between P1B-34 and P1B-24 and at the same time, start the stopwatch. Stop the stopwatch when the CC AMP output between CC AMP test jack and ground reaches a maximum.	1.0 vac	Stopwatch should indicate 4 ±2 sec.		OFF	APPR										Adjust AC INPUT AMPLITUDE until the external ac vtvm indicates 1 vac. Allow the OUTPUT METER to stabilize, then set. INPUT SELECTOR to COURSE DATUM and at the same time start the stopwatch. Stop the stopwatch when the OUTPUT METER reaches a maximum.	Stopwatch should indicate 4 ±2 sec

562R-1 Testing (Sheet 5 of 28)
Figure 701

STEP/TEST	PROCEDURE 1			PROCEDURE 2													17A
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				OFF	COURSE DATUM	VOR	CC AMP	1 VAC	1	1	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL		
5-0 LOC 4 second filter test	For status 001, 006, 007																
5-1	Apply mode voltage to P1A-43. Remove ac input from P1B-34 and P1B-24. Allow the CC AMP output to stabilize. Apply ac input between P1B-34 and P1B-24 and at the same time, start the stopwatch. Stop the stopwatch when the CC AMP output between CC AMP test jack and ground reaches a maximum.	1.0 vac	Stopwatch should indicate 4 ±2 sec.		OFF	LOC										Adjust AC INPUT AMPLITUDE until the external ac vtvm indicates 1 vac. Allow the OUTPUT METER to stabilize, then set INPUT SELECTOR to COURSE DATUM and at the same time start the stopwatch. Stop the stopwatch when the OUTPUT METER reaches a maximum.	Stopwatch should indicate 4 ±2 sec

562R-1 Testing (Sheet 5A of 28)
Figure 701

18

STEP/TEST	PROCEDURE 1			PROCEDURE 2													
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				OFF	COURSE DATUM	LOC	CC AMP	1 VAC	1	1	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL		
6-0 Approach 2 second filter test	For status 001, 006, 007																
6-1	Apply mode voltage to P1B-17. Remove ac input from P1B-34 and P1B-24. Allow the CC AMP output to stabilize. Apply ac input between P1B-34 and P1B-24 and at the same time, start the stopwatch. Stop the stopwatch when the CC AMP output between CC AMP test jack and ground reaches a maximum.	1.0 vac	Stopwatch should indicate 2 ±1 sec.		OFF	APPR										Adjust AC INPUT AMPLITUDE until the external ac vtvm indicates 1 vac. Allow the OUTPUT METER to stabilize, then set INPUT SELECTOR to COURSE DATUM and at the same time start the stopwatch. Stop the stopwatch when the OUTPUT METER reaches maximum.	Stopwatch should indicate 2 ±1 sec

562R-1 Testing (Sheet 6 of 28)
Figure 701

18A

STEP/TEST	PROCEDURE 1			PROCEDURE 2													
				978F-5R TEST SETTINGS								978F-10R TEST SETTINGS					
	PROCEDURE	INPUT	RESULT	DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER	PROCEDURE	RESULT
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				OFF	COURSE DATUM	APPR	CC AMP	1 VAC	1	1	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL		
6-0 Extension 2 second filter test	For status 003, 005, 009, 011, 012, 015, 017, 018, 021																
6-1	Apply mode voltage to P1A-39 and P1B-17. Remove ac input from P1B-34 and P1B-24. Allow the CC AMP output to stabilize. Apply ac input between P1B-34 and P1B-24 and at the same time, start the stopwatch. Stop the stopwatch when the CC AMP output between CC AMP test jack and ground reaches a maximum.	1.0 vac	Stopwatch should indicate 2 ±1 sec.		OFF									ON		Adjust AC INPUT AMPLITUDE until the external ac vtvm indicates 1 vac. Allow the OUTPUT METER to stabilize, then set INPUT SELECTOR to COURSE DATUM and at the same time start the stopwatch. Stop the stopwatch when the OUTPUT METER reaches maximum.	Stopwatch should indicate 2 ±1 sec
6-2	Remove mode voltage from P1A-39													NORM			

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Figure 701

STEP/TEST	PROCEDURE 1			PROCEDURE 2													19
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				OFF	COURSE DATUM	APPR	CC AMP	1 VAC	1	1	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL		
7-0 Course datum gain test	For status 001, 003, 005, 006, 007, 009, 011, 012, 015, 017, 018, 021																
7-1	Connect a dc meter between P1B-21 and P1B-31. Remove the mode voltage from P1A-43 and P1B-17 and apply to P1B-11 and P1A-39. Ground the CF AMP, NAVCAP, and RADIO IN test jacks. Apply ac input between P1B-34 and P1B-24. Read the roll steer output between P1B-21 and P1B-31 while the voltage at TCK test jack is 26 vdc. To reset, remove mode volts from P1B-46, wait 5 sec., then reapply.	3.0 vac	0.745 ±0.080 vdc		COURSE DATUM	VOR	ROLL STEER	1 VDC	4							Adjust AC INPUT AMPLITUDE until the external ac vtvm indicates 3.0 vac. Observe OUTPUT METER on 978F-5R while the NAV CAP light on the 978F-10R is on and before the TRACK light on the 978F-10R is on. NOTE: If the TRACK light is on, reset by turning FUNCTION SELECTOR to HDG, wait for 5 seconds, then turn back to VOR.	0.745 ±0.080 vdc
7-2	Head the roll steer output between P1B-21 and P1B-31 after the voltage at TCK test jack drops to zero.		0.250 ±0.03 vdc													Observe OUTPUT METER after the TRACK light on the 978F-10R comes on.	0.250 ±0.03 vdc

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Figure 701

STEP/TEST	PROCEDURE 1			PROCEDURE 2													20
				978F-5R TEST SETTINGS								978F-10R TEST SETTINGS					
									LOGIC SELECTOR			MODE SELECTORS					
	PROCEDURE	INPUT	RESULT	DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	TEST	GAIN	MONITOR SELECTOR	APPR OVERIDE	TURB	GS EXT	ROLL STEER	PROCEDURE	RESULT
				OFF	COURSE DATUM	VOR	ROLL STEER	1 VDC	4	1	NORM	NORM	NORM	NORM	NORM		
8-0 C.D. cancellation & cc limit (loc)	For Status 001, 003, 005, 006, 007, 009, 011, 012, 015, 017, 018, 021																
8-1	Remove mode voltage from P1B-11 and apply it to P1A-43. Apply ac input between P1B-34 and P1B-24. Read roll steer output between P1B-21 & P1B-31	5.9 vac	0.100 vdc max.			LOC		.1 VDC			NAV FLAG					Adjust AC INPUT AMPLITUDE to 5.9 vac on external ac vtvm. Observe OUTPUT METER	0.100 vdc max
8-2	Apply mode voltage to P1B-11. Remove ground from RADIO IN test jack. Apply input to P1B-32 and P1B-22(com). Adjust ac input for zero roll steer output. (Complete this before voltage between TCK test jack and gnd becomes 0 vdc) Observe ac input. (NOTE: to reset, remove mode volts from P1B-46 wait 5 sec, then reapply.)	-0.300 vdc (+0.300 vdc for out of phase tests)	12.2± 1.0 vac	300 MV				1 VDC			NORM					Adjust DC INPUT AMPLITUDE for a DC INPUT of -0.300 vdc (+0.300 for out of phase tests). Allow output meter to stabilize. Adjust ac input control for 0.0 vdc on OUTPUT METER. Complete this before TRACK light turns on. Observe ext. ac vtvm. To reset turn FUNCTION SEL to HDG, wait 5 sec, then turn back to LOC.	12.2 ±1.0 vac

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Figure 701

STEP/TEST	PROCEDURE 1			PROCEDURE 2													21
				978F-5R TEST SETTINGS								978F-10R TEST SETTINGS					
									LOGIC SELECTOR			MODE SELECTORS					
	PROCEDURE	INPUT	RESULT	DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	TEST	GAIN	MONITOR SELECTOR	APPR OVERIDE	TURB	GS EXT	ROLL STEER	PROCEDURE	RESULT
				300 MV	COURSE DATUM	LOC	ROLL STEER	1 VDC	4	1	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL		
9-0 vor cc limit	For status 001, 003, 005, 006, 007, 009, 011, 012, 015, 017, 018, 021																
9-1	Remove mode volts from P1A-43. Remove dc input for 10 sec, then reapply. Adjust ac input for zero roll steer output. Observe ac input.			OFF		VOR										Wait for nav cap light to come on.	
			4.8 ±0.6 vac	300 MV												Adjust AC INPUT AMPLITUDE to zero o OUTPUT meter. Observe external ac vtvm.	4.8 ±0.6 vac
9-2	Remove mode volts from P1B-11. If TRACK volts are zero, reset by removing mode volts from P1B-46, wait 5 sec, then reapply. Adjust ac input for zero roll steer output. Observe ac input.		12.2 ±1.0 vac								NAV FLAG					If TRACK light is on, reset by turning FUNCTION SEL to HDG, wait 5 sec, then turn back to VOR. Adjust AC INPUT AMPLITUDE for zero on OUTPUT meter. Observe external ac vtvm.	12.2 ±1.0 vac

STEP/TEST	PROCEDURE 1			PROCEDURE 2													22
				978F-5R TEST SETTINGS								978F-10R TEST SETTINGS					
	PROCEDURE	INPUT	RESULT	DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER	PROCEDURE	RESULT
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				300 MV	COURSE DATUM	VOR	ROLL STEER	1 VDC	4	1	NAV FLAG	NORMAL	NORMAL	NORMAL	NORM		
10-0 Bank command off test	For status 001, 003, 005, 006, 007, 009, 011, 012, 015, 017, 018, 021																
10-1	Remove mode voltage from P1B-43 and apply it to P1B-44 and P1B-11. Remove dc input from P1B-32 and P1B-22. Read the roll steer output between P1B-21 and P1B-31.		0.050 v dc maximum	OFF		SC		.1 VDC			NORMAL					Observe OUTPUT METER	0.050 vdc maximum

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Figure 701

STEP/TEST	PROCEDURE 1			PROCEDURE 2													23
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				OFF	COURSE DATUM	SC	ROLL STEER	.1 VDC	4	1	NORMAL	NORMAL	NORMAL	NORMAL	NORM		
11-0 Heading logic course datum off test	For status 001, 003, 005, 006, 007, 009, 011, 012, 015, 017, 018, 021																
11-1	Remove mode voltage from P1B-44 and apply it to P1B-47.					HDG										Observe OUTPUT METER.	0.040 vdc maximum
	Read the roll steer output between P1B-21 and P1B-31.		0.040 v dc maximum														

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STEP/TEST	PROCEDURE 1			PROCEDURE 2													24
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				OFF	COURSE DATUM	HDG	ROLL STEER	.1 VDC	4	1	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL		
12-0 Heading gain test	For status 001, 003, 005, 006, 007, 009, 011, 012, 015, 017, 018, 021																
12-1	Remove ac input from between P1B-34 and P1B-24. Apply ac input between P1B-33 and P1B-23 (com). Read the roll steer output between P1B-21 and P1B-31.	2.0 vac	0.660 ±0.066 vdc		SEL HDG			1 VDC								Adjust AC INPUT AMPLITUDE for an external ac vtvm reading of 2.0 vac. Observe OUTPUT METER.	0.660 ±0.066 vdc

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STEP/TEST	PROCEDURE 1			PROCEDURE 2													25
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				OFF	SEL HDG	HDG	ROLL STEER	1 VDC	4	1	NORMAL	NORMAL	NORMAL	NORMAL	NORM		
13-0 Bank limit test (hdg)	For status 001, 003, 005, 006, 009, 011, 012, 015, 017, 018, 021																
13-1	Apply 13 volts ac between P1B-33 and P1B-23. Apply ac input between P1B-30 and P1B-20, and increase the amplitude until the roll steer output between P1B-21 and P1B-31 is zero. Observe the level of the ac input.		5.0 ±0.50 vac		BANK											Set HDG B/L selector to ON. Adjust AC INPUT AMPLITUDE for a zero OUTPUT METER reading. Observe the external ac vtvm.	5.0 ±0.50 vac
13-2	Remove ac input from between P1B-33 and P1B-23.															Set HDG B/L selector to OFF position.	

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STEP/TEST	PROCEDURE 1			PROCEDURE 2													
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				OFF	SEL HDG	HDG	ROLL STEER	1 VDC	4	1	NORMAL	NORMAL	NORMAL	NORMAL	NORM		
13-0 Bank limit test (hdg)	For status 007																
13-1	Apply 13 volts ac between P1B-33 and P1B-23 Apply ac input between P1B-30 and P1B-20, and increase the amplitude until the roll steer output between P1B-21 and P1B-31 is zero. Observe the level of the ac input.		5.9 ±0.59 vac		BANK											Set HDG B/L selector to ON. Adjust AC INPUT AMPLITUDE for a zero OUTPUT METER reading. Observe the external ac vtvm.	5.9 ±0.59 vac
13-2	Remove ac input from between P1B-33 and P1B-23.															Set HDG B/L selector to OFF position	

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STEP/TEST	PROCEDURE 1			PROCEDURE 2													26
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				OFF	BANK	HDG	ROLL STEER	1 VDC	4	1	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL		
14-0 Bank limit test (vor, loc)	For status 001, 003, 005, 006, 009, 011, 012, 015, 017, 018, 021																
14-1	Apply dc input between P1B-32 and P1B-22. Remove ground from NAV CAP test point on logic module. Apply mode voltage to P1B-46. Apply ac input between P1B-30 and P1B-20 until the roll steer output between P1B-21 and P1B-31 is zero. Observe the level of the ac input between P1B-30 and P1B-20.	1.5 vdc (-1.5 vdc for out of phase tests)	5.0 ±0.50 vac	1.5 V		VOR										Adjust DC INPUT AMPLITUDE until DC INPUT METER indicates 1.5 volts. (-1.5 volts for out of phase test) Adjust AC INPUT AMPLITUDE until OUTPUT METER indicates zero. Observe the external ac vtvm. IF NAV CAP LIGHT IS ON. SWITCH FUNCTION SELECTOR TO HDG FOR 5 SEC AND THEN RETURN TO VOR.	5.0 ±0.50 vac
14-2	Apply dc input between P1B-32 and P1B-22. Remove ground from NAV CAP test point on logic module. Apply mode voltage to P1B-46 and P1A-43. Apply ac input between P1B-30 and P1B-20 until the roll steering output between P1B-21 and P1B-31 is zero. Observe the level of the ac input between P1B-30 and P1B-20.	1.5 vdc (-1.5 vdc for out of phase tests)	5.0 ±0.50 vac			LOC										Adjust DC INPUT AMPLITUDE until DC INPUT METER indicates 1.5 volts. (-1.5 volts for out of phase test) Adjust AC INPUT AMPLITUDE until OUTPUT METER indicates zero. Observe the external ac vtvm. IF NAV CAP LIGHT IS ON, SWITCH FUNCTION SELECTOR TO HDG FOR 5 SEC AND THEN RETURN TO VOR.	5.0 ±0.50 vac

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Figure 701

STEP/TEST	PROCEDURE 1			PROCEDURE 2													26A
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR TEST	LOGIC SELECTOR GAIN	MONITOR SELECTOR	MODE SELECTORS APPR OVERIDE	MODE SELECTORS TURB	MODE SELECTORS GS EXT	ROLL STEER		
				OFF	BANK	HDG	ROLL STEER	1 VDC	4	1	NORMAL	NORMAL	NORMAL	NORMAL	NORM		
14-0 Bank limit test (vor, loc)	For status 007																
14-1	Apply dc input between P1B-32 and P1B-22. Remove ground from NAV CAP test point on logic module. Apply mode voltage to P1B-46. Apply ac input between P1B-30 and P1B-20 until the roll steer output between P1B-21 and P1B-31 is zero. Observe the level of the ac input between P1B-30 and P1B-20.	1.5 vdc (-1.5 vdc for out of phase tests)	5.9 ±0.59 vac	1.5 V		VOR										Adjust DC INPUT AMPLITUDE until DC INPUT METER indicates 1.5 volts. (-1.5 volts for out of phase test) Adjust AC INPUT AMPLITUDE until OUTPUT METER indicates zero. Observe the external ac vtvm. IF NAV CAP LIGHT IS ON, SWITCH FUNCTION SELECTOR TO HDG FOR 5 SEC AND THEN RETURN TO VOR.	5.9 ±0.59 vac
14-2	Apply dc input between P1B-32 and P1B-22. Remove ground from NAV CAP test point on logic module. Apply mode voltage to P1B-46 and P1A-43. Apply ac input between P1B-30 and P1B-20 until the roll steer output between P1B-21 and P1B-31 is zero. Observe the level of the ac input between P1B-30 and P1B-20.	1.5 vdc (-1.5 vdc for out of phase tests)	5.9 ±0.59 vac			LOC										Adjust DC INPUT AMPLITUDE until DC INPUT METER indicates 1.5 volts. (-1.5 volts for out of phase test) Adjust AC INPUT AMPLITUDE until OUTPUT METER indicates zero. Observe the external ac vtvm. IF NAV CAP LIGHT IS ON, SWITCH FUNCTION SELECTOR TO HDG FOR 5 SEC AND THEN RETURN TO VOR.	5.9 ±0.59 vac

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Figure 701

STEP/TEST	PROCEDURE 1			PROCEDURE 2													27
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				1.5 V	BANK	VOR	ROLL STEER	1 VDC	4	1	NORMAL	NORMAL	NORMAL	NORMAL	NORM		
15-0 Approach bank limit test	For status 001, 003, 007, 012, 021																
15-1	Apply mode voltage to P1B-17 and P1A-43. Apply dc input between P1B-32 and P1B-22 Apply ac input between P1B-30 and P1B-20 until the roll steer output between P1B-21 and P1B-31 is zero. Observe the level of the ac input between P1B-30 and P1B-20.	1.5 vdc (-1.5 vdc for out of phase tests)	3.06 ±0.3 vac			APPR										Adjust DC INPUT AMPLITUDE until DC INPUT METER indicates +1.5 volts. (-1.5 volts for out of phase test) Adjust AC INPUT AMPLITUDE until OUTPUT METER indicates zero. Observe the external ac vtvm.	3.06 ±0.3 vac

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27A

STEP/TEST	PROCEDURE 1			PROCEDURE 2													
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR TEST	LOGIC SELECTOR GAIN	MONITOR SELECTOR	MODE SELECTORS APPR OVERIDE	MODE SELECTORS TURB	MODE SELECTORS GS EXT	ROLL STEER		
				1.5 V	BANK	LOC	ROLL STEER	1 VDC	.4	1	NORMAL	NORMAL	NORMAL	NORMAL	NORM		
15-0 Approach bank limit test	For status 005, 006, 009, 011, 015, 017, 018.																
15-1	Apply mode voltage to P1B-17 and P1A-43. Apply dc input between P1B-32 and P1B-22. Apply ac input between P1B-30 and P1B-20 until the roll steer output between P1B-21 and P1B-31 is zero. Observe the level of the ac input between P1B-30 and P1B-20.	1.5 vdc (-1.5 vdc for out of phase tests)	3.06 ±0.3 vac			APPR						ON				Adjust DC INPUT AMPLITUDE until DC INPUT METER indicates +1.5 volts. (-1.5 volts for out of phase test) Adjust AC INPUT AMPLITUDE until OUTPUT METER indicates zero. Observe the external ac vtvm.	3.06 ±0.3 vac
15-2	Remove mode voltage from P1B-17.											NORM					

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STEP/TEST	PROCEDURE 1			PROCEDURE 2													28
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				1.5 V	BANK	APPR	ROLL STEER	1 VDC	4	1	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL		
16-0 Heading off test	For status 001, 003, 005, 006, 007, 009, 011, 012, 015, 017, 018, 021																
16-1	Remove mode voltage from P1B-17 and P1B-46 and P1A-43 and AC input from P1B-30 and P1B-20. Apply 1.0 vac between P1B-33 and P1B-23. Remove dc input from between P1B-32 and P1B-22. Read the roll steer output between P1B-21 and P1B-31.		0.050 vdc maximum	OFF	SEL HDG	OFF		.1 VDC								Observe OUTPUT METER.	0.050 volt maximum.

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Figure 701

STEP/TEST	PROCEDURE 1			PROCEDURE 2													29
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				OFF	SEL HDG	OFF	ROLL STEER	.1 VDC	4	1	NORMAL	NORMAL	NORMAI	NORMAL	NORMAL		
17-0 Radio gain test	For status 001, 003, 005, 006, 007, 009, 011, 012, 015, 017, 018, 021																
17-1	Apply mode voltage to P1B-46. Remove ac input from between P1B-33 and P1B-23. Apply dc input between P1B-32 and P1B-22. Read the roll steer output between P1B-21 and P1B-31.	0.030 vdc (-0.030 vdc for out of phase tests)	0.600 ±0.066 vdc	30MV	OFF	VOR		1 VDC								Adjust DC INPUT AMPLITUDE for a DC INPUT METER reading of 30 mvdc. (-30 mvdc for out of phase tests) Observe the OUTPUT METER.	0.600 ±0.066 vdc
17-2	Apply mode voltage to P1A-43. Read the roll steer output between P1B-21 and P1B-31.		0.315 ±0.033 vdc			LOC										Observe the OUTPUT METER.	0.315 ±0.033 vdc
17-3	Remove mode voltage from P1B-11.										NAV FLAG						

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	PROCEDURE 1			PROCEDURE 2													
STEP/TEST	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				30 MV	OFF	LOC	ROLL STEER	1 VDC	4	1	NAV FLAG	NORMAL	NORMAL	NORMAL	NORMAL		
18-0 Heading hold latching test	For status 001, 007, 009, 012, 021																
18-1	Remove mode voltage from P1B-46, wait 5 sec, then reapply. Momentarily apply mode voltage to P1B-47. Measure the voltage at the HDG test jack		+28 ±4 vdc													Set FUNCTION SEL to HDG for 5 sec then return to LOC. Depress HDG HOLD switch for 1 sec. Observe the LOGIC lights on the 978F-10R	HDG (on) V/L(on) LOC FREQ (on)
18-2	Remove the mode voltage from P1B-46 and P1A-43, then reapply mode voltage to P1B-46. Measure the voltage at the HDG test jack.		-2 to +4 vdc			VOR (see procedure)										Set FUNCTION SELECTOR to HDG for 1 second, then to VOR. Observe the LOGIC lights on the 978F-10R	HDG (off) V/L (on) LOC FREQ (off)
18-3	Momentarily apply mode voltage to P1B-47. Measure the voltage at the HDG test jack.		+28 ±4 vdc													Depress HDG HOLD switch for 1 second Observe the LOGIC lights on the 978F-10R	HDG (on) V/L (on)
18-4	Place a jumper between the NAV CAP and the GRD test jacks. Measure the voltage at the HDG test jack.		-2 to +4 vdc						5							Observe LOGIC lights on the 978F-10R.	HDG (off) V/L (on)
18-5	Remove the jumper between the NAV CAP and GRD test jacks.								4								

STEP/TEST	PROCEDURE 1			PROCEDURE 2													30A
				978F-5R TEST SETTINGS								978F-10R TEST SETTINGS					
	PROCEDURE	INPUT	RESULT	DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER	PROCEDURE	RESULT
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				30 MV	OFF	LOC	ROLL STEER	1 VDC	4	1	NAV FLAG	NORMAL	NORMAL	NORMAL	NORMAL		
18-0 Heading hold latching test	For status 003, 005, 006, 011, 015, 017, 018																
18-1	Remove mode voltage from P1B-46, wait 5 sec, then reapply Momentarily apply mode voltage to P1B-47 Measure the voltage at the HDG test jack		+28 ±4 vdc													Set FUNCTION SEL to HDG for 5 sec then return to LOC. Depress HDG HOLD switch for 1 second. Observe the annunciator and LOGIC lights on the 978F-10R.	HDG (on) V/L (on) LOC FREQ (on) HDG ON (on) NAV ARM (on)
18-2	Remove the mode voltage from P1B-46 and P1A-43, then reapply mode voltage to P1B-46. Measure the voltage at the HDG test jack.		-2 to +4 vdc			VOR (see procedure)										Set FUNCTION SELECTOR to HDG for 1 second, then to VOR. Observe the annunciator and LOGIC lights on the 978F-10R.	HDG (off) V/L (on) LOC FREQ (off) HDG ON (off) NAV ARM(on)
18-3	Momentarily apply mode voltage to P1B-47. Measure the voltage at the HDG test jack.		+28 ±4 vdc													Depress HDG HOLD switch for 1 second. Observe the annunciator and LOGIC lights on the 978F-10R.	HDG (on) V/L (on) HDG ON (on) NAV ARM (on)
18-4	Place a jumper between to NAV CAP and the GRD test jacks. Measure the voltage at the HDG test jack.		-2 to +4 vdc													Observe annunciator and LOGIC lights on the 978F-10R.	HDG (off) V/L (on) HDG ON (off) NAV ON (on)
18-5	Remove the jumper between the NAV CAP and GRD test jacks.																

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STEP/TEST	PROCEDURE 1			PROCEDURE 2													31
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				30 MV	OFF	VOR	ROLL STEER	1 VDC	4	1	NAV FLAG	NORMAL	NORMAL	NORMAL	NORMAL		
19-0 Beam sensor nav arm test	For status 001, 003, 005, 006,007, 009, 011, 013, 015, 017, 018, 021																
19-1	Apply mode voltage to P1A-43. Apply dc input to P1B-32 and P1B-22.	0.240 vdc (-0.240 vdc for out of phase tests)		300 MV		LOC										Adjust DC INPUT AMPLITUDE until the DC INPUT METER indicates 240 mv. (-240 mv for out of phase tests)	
19-2	Wait 15 seconds															Wait 15 seconds.	
19-3	Apply mode voltage to P1B-11 Connect dc voltmeter between P1A-6 (+ terminal) and P1B-6 Read the dc voltmeter		+28 ±4 vdc								NORMAL					Observe the NAV ARM ANNUNCIATOR on the 978F-10R.	NAV ARM (on)

562R-1 Testing (Sheet 19 of 28)
Figure 701

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STEP/TEST	PROCEDURE 1			PROCEDURE 2													
				978F-5R TEST SETTINGS								978F-10R TEST SETTINGS					
									LOGIC SELECTOR			MODE SELECTORS					
	PROCEDURE	INPUT	RESULT	DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	TEST	GAIN	MONITOR SELECTOR	APPR OVERIDE	TURB	GS EXT	ROLL STEER	PROCEDURE	RESULT
				30 MV	OFF	LOC	ROLL STEER	1 VDC	4	1	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL		
20-0 Beam sensor trip point and nav on test (loc)	For status 001, 003, 005, 006, 007, 009, 011, 012, 015, 017, 018, 021																
20-1	Connect a dc voltmeter between P1A-3 (+terminal) and P1B-3. Slowly reduce dc input between P1B-32 and P1B-22 until the dc voltmeter reads +28 vdc. Then measure the dc voltage between P1A-9 and ground. Observe the dc input level between P1B-32 and P1B-22.		Voltage from P1A-9 to ground is -2 to +4 vdc Voltage between P1B-32 and P1B-22 is 0.150 ±0.025 vdc													Slowly reduce DC INPUT AMPLITUDE until the NAV CAP light on the 978F-10R comes on. Observe DC INPUT METER.	0.150 ±0.025 vdc.

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Figure 701

STEP/TEST	PROCEDURE 1			PROCEDURE 2													
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				300 MV	OFF	LOC	ROLL STEER	1 VDC	4	1	NORMAL	NORMAL	NORMAL	NORMAL	NORM		
21-0 Beam sensor trip point (VOR)	For status: 001, 003, 005, 006, 007, 009, 011, 012, 015, 017, 018, 021																
21-1	Remove the mode voltage from PA-43 and P1B-46 for 10 seconds, then reapply to P1B-46.			150 MV (see procedure)		VOR (see procedure)										Increase the DC INPUT AMPLITUDE so DC INPUT METER reads 240 mv. Then set DC INPUT METER SCALE switch to 150 mv. Set FUNCTION SELECTOR to HDG for 10 seconds then to VOR	
	Observe the voltmeter connected between P1A-3 and P1B-3.		Dc voltmeter indicates -2 to +4 vdc.													Observe the lights on the 978F-10R.	NAV ARM (on) NAV ON (off)
21-2	Slowly reduce the dc input between P1B-32 and P1B-22 until voltmeter between P1A-3 and P1B-3 reads +28 ±4 vdc.															Slowly reduce DC INPUT AMPLITUDE until NAV ON light comes on.	
	Read dc input level between P1B-32 and P1B-22.		0.075 ±0.020 vdc													Observe the lights on the 978F-10R.	NAV ARM (off) NAV ON (on)
																Observe the DC INPUT METER	0.075 ±0.020 vdc

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Figure 701

STEP/TEST	PROCEDURE 1			PROCEDURE 2													34
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				150 MV	OFF	VOR	ROLL STEER	1 VDC	4	1	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL		
22-0 Beam sensor reset test.	For status: 001, 003, 005, 006, 007, 009, 011, 012, 015, 017, 018, 021																
22-1	Increase the dc input between P1-32 and P1-22.	0.240 vdc		300 MV				10 VDC								Increase DC INPUT AMPLITUDE for a DC INPUT METER reading of 240 mv.	
	Remove mode voltage from P1B-46 for 10 seconds then reapply mode voltage.															Set FUNCTION SELECTOR to HDG for 10 seconds then return to VOR.	
	Observe voltmeter between P1A-3 and P1B-3.		-2 to +4 vdc													Observe the NAV ARM light on the 978F-10R.	NAV ARM (on)
																Observe the NAV ON light on the 978F-10R.	NAV ON (off)

STEP/TEST	PROCEDURE 1			PROCEDURE 2													
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				OFF	OFF	VOR	ROLL STEER	10 VDC	4	1	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL		
24-0 Off course timer test	For status: 001, 003, 005, 006, 007, 009, 011, 012, 015, 017, 018, 021																
24-1	Wait 2 minutes.															Wait 2 minutes.	
24-2	Apply dc input between P1B-32 and P1B-22 and start stopwatch. Stop stopwatch when voltmeter between P1A-3 and P1B-3 reads -2 v to +4 v and TCK to ground voltage is +28 ±4 vdc.	0.240 vdc	90 ±30 seconds													Start stopwatch when setting DC INPUT METER SCALE switch. Stop stopwatch when NAV CAP and TRACK lights on 978F-10R go out simultaneously.	90 ±30 seconds

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Figure 701

STEP/TEST	PROCEDURE 1			PROCEDURE 2													35
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				300 MV	OFF	VOR	ROLL STEER	10 VDC	4	1	NORMAL	NORMAL	NORMAL	NORMAL	NORM		
23-0 On course timer test.	For status: 001, 003, 005, 006, 007, 009, 011, 012, 015, 017, 018, 021																
23-1	Wait 2 minutes.															Wait 2 minutes.	
23-2	Connect a dc voltmeter between TCK test jack and ground.		OFF													Start stopwatch when the NAV ON light on the 978F-10R comes on.	
	Remove dc input between P1B-32 and P1B-22.															Stop the stopwatch when the TRACK light on the 978F-10R comes ON.	90 ±30 seconds
	Start stopwatch when voltmeter between P1A-3 and P1B-3 indicates +28 ±4 vdc.																
	Stop stopwatch when voltmeter between TCK and ground indicates -2 v to +4 v.	90 ±30 seconds															

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Figure 701

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STEP/TEST	PROCEDURE 1			PROCEDURE 2													
				978F-5R TEST SETTINGS								978F-10R TEST SETTINGS					
	PROCEDURE	INPUT	RESULT	DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER	PROCEDURE	RESULT
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				300 MV	OFF	VOR	ROLL STEER	10 VDC	4	1	NORMAL	NORMAL	NORMAL	NORMAL	NORM		
25-0 Computer monitor tests	For all status: Connect a dc voltmeter and 1K ohm load between P1A-28 (-terminal) and the +terminal on the logic module. Remove mode volts from P1B-11 and P1B-46.															Set the controls as indicated for each step then observe the COMPT MON (REAR) light on the 978F-10R.	
25-1	Apply mode voltage to P1A-41. Observe voltmeter.		approx. 28 vdc			OFF					OFF						on
25-2	Apply mode voltage to P1A-41, P1B-10, P1B-11, P1B-12, P1B-14 observe voltmeter.		approx. +28 vdc								NORMAL						on
25-3	Apply mode voltage to P1A-41, P1B-10, P1B-11, P1B-12. Observe voltmeter.		approx. +28 vdc								COMPASS						on
25-4	Apply mode voltage to P1A-41, P1B-10, P1B-12, P1B-14. Observe voltmeter.		approx. +28 vdc								NAV FLAG						on
25-5	Apply mode voltage to P1A-41, P1B-11, P1B-12, P1B-14. Observe voltmeter.		approx. +28 vdc								GYRO						on
25-6	Apply mode voltage to P1A-41, P1B-10, P1B-11, P1B-14. Observe voltmeter.		approx. +28 vdc								PITCH						on
25-7	Apply mode voltage to P1B-47, P1B-10, P1B-11, P1B-14. Observe voltmeter.		approx. 0 vdc			HDG											off
25-8	Apply mode voltage to P1B-47, P1B-11, P1B-12, P1B-14. Observe voltmeter.		approx. 0 vdc								GYRO						off

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Figure 701

STEP/TEST	PROCEDURE 1			PROCEDURE 2													
				978F-5R TEST SETTINGS								978F-10R TEST SETTINGS					
									LOGIC SELECTOR			MODE SELECTORS					
	PROCEDURE	INPUT	RESULT	DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	TEST	GAIN	MONITOR SELECTOR	APPR OVERIDE	TURB	GS EXT	ROLL STEER	PROCEDURE	RESULT
				300 MV	OFF	HDG	ROLL STEER	10 VDC	4	1	GYRO	NORMAL	NORMAL	NORMAL	NORMAL		
25-9	Apply mode voltage to P1B-47, P1B-10, P1B-12, P1B-14. Observe voltmeter.		approx. +28 vdc								NAV FLAG						on
25-10	Apply mode voltage to P1B-47, P1B-10, P1B-11, P1B-12. Observe voltmeter.		approx. 0 vdc								COM-PASS						off
25-11	Apply mode voltages to P1B-47, P1B-10, P1B-11, P1B-12, P1B-14. Observe voltmeter.		approx. +28 vdc								NOR-MAL						on
25-12	Apply mode voltage to P1B-47. Observe voltmeter.		approx. 0 vdc								OFF						off
25-13	Apply mode voltage to P1B-44. Observe voltmeter.		approx. 0 vdc			SC											off
25-14	Apply mode voltage to P1B-44, P1B-10, P1B-11, P1B-12, P1B-14. Observe voltmeter.		approx. +28 vdc								NOR-MAL						on
25-15	Apply mode voltage to P1B-44, P1B-10, P1B-11, P1B-12. Observe voltmeter.		approx. +28 vdc								COM-PASS						on
25-16	Apply mode voltage to P1B-44, P1B-10, P1B-12, P1B-14. Observe voltmeter.		approx. +28 vdc								NAV FLAG						on

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Figure 701

STEP/TEST	PROCEDURE 1			PROCEDURE 2													39
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
	F			300 MV	OFF	SC	ROLL STEER	10 VDC	4	1	NAV FLAG	NORMAL	NORMAL	NORMAL	NORMAL		
25-17	Apply mode voltage to P1B-44, P1B-11, P1B-12, P1B-14. Observe voltmeter.		approx. 0 vdc								GYRO						off
25-18	Apply mode voltage to P1B-44, P1B-10, P1B-11, P1B-14. Observe voltmeter.		approx. 0 vdc								PITCH						off
25-19	Apply mode voltage to P1B-46, P1B-10, P1B-11, P1B-14. Observe voltmeter.		approx. 0 vdc			VOR											off
25-20	Apply mode voltage to P1B-46, P1B-11, P1B-12, P1B-14. Observe voltmeter.		approx. 0 vdc								GYRO						off
25-21	Apply mode voltage to P1B-46, P1B-10, P1B-12, P1B-14. Observe voltmeter.		approx. 0 vdc								NAV FLAG						off
25-22	Apply mode voltages to P1B-46, P1B-10, P1B-11, P1B-12. Observe voltmeter.		approx. 0 vdc								COM-PASS						off
25-23	Apply mode voltage to P1B-46, P1B-10, P1B-11, P1B-12, P1B-14, Observe voltmeter.		approx. +28 vdc								NORMAL						on
25-24	Apply mode voltage to P1B-46. Observe voltmeter.		approx. 0 vdc								OFF						off

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Figure 701

STEP/TEST	PROCEDURE 1			PROCEDURE 2													40
	PROCEDURE	INPUT	RESULT	978F-5R TEST SETTINGS								978F-10R TEST SETTINGS				PROCEDURE	RESULT
				DC INPUT METER SCALE	INPUT SELECTOR	FUNCTION SELECTOR	OUTPUT SELECTOR	OUTPUT METER SCALE	LOGIC SELECTOR		MONITOR SELECTOR	MODE SELECTORS			ROLL STEER		
									TEST	GAIN		APPR OVERIDE	TURB	GS EXT			
				300 MV	OFF	VOR	ROLL STEER	10 VDC	4	1	OFF	NORMAL	NORMAL	NORMAL	NORM		
26-0 Out of phase tests	For all status To be performed for all tests except: Beam sensor reset, on course time constant, off course time constant, and computer monitor checks.																
26-1	Refer to testing directions for proper phasing of input signals. Result: the polarity of the roll steer output will be opposite that for the in phase tests. Polarity of DC input readings of Beam Sensor trip point tests (LOC and VOR) will be reversed. All other results will remain the same. Tolerances will remain the same. NOTE: After testing is completed, remove jumpers installed in step 0-1, test setup.															Set PHASE SELECTOR to Ø. Results: the polarity of the roll steer output will be opposite that for the in phase tests. Polarity of DC input readings of Beam Sensor trip point tests (LOC and VOR) will be reversed. All other results will remain the same. Tolerances will remain the same.	

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Figure 701

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STEP / TEST	PROCEDURE 1			PROCEDURE 2								
	PROCEDURE	INPUT	RESULT	978F-4A TEST SETTINGS					978F-9A TEST SETTINGS		PROCEDURE	RESULT
				CHANNEL SELECTOR	OFF MODE	INPUT SELECTOR	INPUT LINE	OUTPUT	LOGIC/ MONITOR INPUTS	SIGNAL INPUT		
0-1 Test Setup	Apply 26 volt, 400 cps power (cold) to P1A-51, (hot) to P1A-53. Connect servo amp control phase load between P1A-21 and P1A-51. (See fig. 1003.) Connect COMPUTER MONITOR test jack on logic module to ground. Connect phase angle voltmeter to control phase load. (See fig. 1003.) and set function sel. to 90°. Connect servo amp fixed phase load between P1A-31 and P1A-53. (See fig. 1004.) Connect ac vtvm between P1A-31 and P1A-53. Connect P1B-1 to dc ground. Connect synchro simulator H (26 vac) to P1A-53 and C (common) to P1A-51. Connect Z position output to P1A-20, X position output to P1A-23, Y position output to P1A-30, and dc ground to P1A-28.			DC	NORMAL	LOCALIZER ROLL CMD	SIG	VAR PHASE 15 V	PITCH SERVO MON - OFF COMPUTER MONITOR GND - ON OUT OF VIEW - OFF OFF MODE - OFF	POSITION H or X	Initial control settings on the 978F-4A; DC INPUT SCALE to 60 MV, AMPLIFIER switch to TYPE O. 115 v 400∼ switch to ON. Connect ungrounded ac vtvm to EXTERNAL AC VTVM jacks on the 978F-9A. Set POWER switch to ON.	
1-0 Converter and servo amplifier standoff test												
1-1	Adjust synchro simulator control for minimum output between P1A-30 and P1A-23. Apply dc input between P1B-21 and P1B-31 and adjust for zero output on phase angle voltmeter. Alternately adjust synchro simulator control and the dc input until a minimum is obtained between P1A-30 and P1A-23 while measuring zero on the phase angle voltmeter. Read the dc input between P1B-21 and P1B-31.		0 ±0.06 vdc								Adjust SIMULATOR A control on the 978F-2S for minimum indication on the external ac vtvm. Adjust 978F-4A INPUT SIGNAL control until the OUTPUT METER indicates zero. Readjust SIMULATOR A control and INPUT SIGNAL control alternately, to obtain a minimum on the external ac vtvm and zero on the OUTPUT METER. Observe DC INPUT METER.	0 ±0.06 vdc

562R-1 Servo-Channel Testing (Sheet 1 of 5)
Figure 702

STEP / TEST	PROCEDURE 1			PROCEDURE 2								
	PROCEDURE	INPUT	RESULT	978F-4A TEST SETTINGS					978F-9A TEST SETTINGS		PROCEDURE	RESULT
				CHANNEL SELECTOR	OFF MODE	INPUT SELECTOR	INPUT LINE	OUTPUT	LOGIC/ MONITOR INPUTS	SIGNAL INPUT		
				DC	NORMAL	LOCALIZER ROLL CMD	SIG	VAR PHASE 15 V	See step 0-1	POSITION H or X		
2-0 Converter and sero amplifier fixed phase test												
2-1	Read the fixed phase output.		26 ±5.0 vac					FIXED PHASE 30 V (See procedure)			Set OUTPUT SELECTOR to FIXED PHASE 30 V and observe OUTPUT METER.	26 ±5.0 vac
3-0 Converter and servo amplifier variable phase gain check												
3-1	Reduce dc input to zero. Adjust SYNCHRO SIM to zero the PHASE ANGLE VOLTMETER. Increase dc input between P1B-21 and P1B-31 until phase angle voltmeter reads required input level. Read the resultant dc input between P1B-21 and P1B-31.	5 vdc right deflection	-0.010 ±0.010 vdc					VAR PHASE 15 V			Reduce the dc input to zero. Adjust SYNCHRO SIM. to zero the OUTPUT METER. Adjust DC INPUT SIGNAL control until OUTPUT METER reads -5 vdc. (Left deflection) Observe DC INPUT METER.	-0.010 ±0.010 vdc
3-2	Reduce dc input between P1B-21 and P1B-31 to zero and reverse polarity. Increase dc input until phase angle voltmeter reads required input level. Read the resultant dc input between P1B-21 and P1B-31.	5 vdc left deflection	+0.010 ±0.010 vdc								Adjust DC INPUT SIGNAL control unit OUTPUT METER reads +5 vdc. (Right deflection) Observe DC INPUT METER.	+0.010 ±0.010 vdc
4-0 Off mode test												
4-1	Apply mode voltage to P1A-41. Vary dc input between P1B-21 and P1B-31 ±60 mv. Observe phase angle voltmeter.		Does not vary						OFF MODE-ON		Vary INPUT SIGNAL control so that DC INPUT METER varies ±60 mvdc. Observe OUTPUT METER.	Does not vary

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Figure 702

STEP / TEST	PROCEDURE 1			PROCEDURE 2								
				978F-4A TEST SETTINGS					978F-9A TEST SETTINGS			
	PROCEDURE	INPUT	RESULT	CHANNEL SELECTOR	OFF MODE	INPUT SELECTOR	INPUT LINE	OUTPUT	LOGIC/ MONITOR INPUTS	SIGNAL INPUT	PROCEDURE	RESULT
				DC	NORMAL	LOCAL-IZER ROLL CMD	SIG	VAR PHASE 15 V	OFF MODE ON	POSITION H or X		
5-0 Out of view test												
5-1	Remove ground from P1A-28 Remove mode voltage from P1A-41. Vary dc input between P1B-21 and P1B-31, ±60 mv. Observe phase angle voltmeter.		Does not vary						COMPUTER MONITOR GND - OFF OFF MODE-OFF		Vary INPUT SIGNAL control so that DC INPUT METER varies ±60 mvdc. Observe OUTPUT METER.	Does not vary
5-2	Apply ground to P1A-28.								COMPUTER MONITOR GND - ON			
6-0 Position gain test												
6-1	Adjust synchro simulator control for a minimum between P1A-30 and P1A-23. Then adjust dc input between P1B-21 and P1B-31 for zero on the phase angle voltmeter. Repeat as necessary to obtain lowest minimum between P1A-30 and P1A-23 while phase angle voltmeter reads zero. Adjust synchro simulator control until phase angle voltmeter reads required level. Read ac input between P1A-30 and P1A-23	5 vdc right deflection	0.060 ±0.030 vac								Adjust SIMULATOR A control for a minimum of the external ac vtvm then adjust INPUT SIGNAL control for zero on the OUTPUT METER. Repeat until minimum signal is obtained on the external ac vtvm and zero on the OUTPUT METER. Adjust SIMULATOR A control for an OUTPUT METER reading of +5 vdc. Observe the external ac vtvm.	0.060 ±0.030 vac
6-2	Adjust synchro simulator control until phase angle voltmeter reads required level. Read ac input between P1A-30 and P1A-23.	5 vdc left deflection	0.060 ±0.030 vac								Adjust SIMULATOR A control for an OUTPUT METER reading of -5 vdc. Observe the external ac vtvm.	0.060 ±0.030 vac

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Figure 702

STEP / TEST	PROCEDURE 1			PROCEDURE 2								
	PROCEDURE	INPUT	RESULT	978F-4A TEST SETTINGS					978F-9A TEST SETTINGS		PROCEDURE	RESULT
				CHANNEL SELECTOR	OFF MODE	INPUT SELECTOR	INPUT LINE	OUTPUT	LOGIC/ MONITOR INPUTS	SIGNAL INPUT		
				DC	NORMAL	LOCALIZER ROLL CMD	SIG	VAR PHASE 15 V	See step 0-1	POSITION H or X		
7-0 Rate gain test												
7-1	Remove synchro simulator Y position output from P1A-30 and apply to P1A-33. Adjust synchro simulator control until phase angle voltmeter reads required level. Read ac input between P1A-33 and P1A-23.	5 vdc right deflection	0.080 ±0.040 vac							RATE	Adjust SIMULATOR A control for an OUTPUT METER reading of +5 vdc. Observe the external ac vtvm.	0.080 ±0.040 vac
7-2	Adjust synchro simulator control until phase angle voltmeter reads required level. Read ac input between P1A-33 and P1A-23.	5 vdc left deflection	0.080 ±0.040 vac								Adjust SIMULATOR A control for an OUTPUT METER reading of -5 vdc. Observe the external ac vtvm.	0.080 ±0.040 vac
7-3	Turn synchro simulator to 0 degree.										Turn SIMULATOR A control to 0 degree.	
8-0 Steer flag tests												
8-1	Apply mode voltage to P1A-12. Connect 1000 ohm load and dc voltmeter between P1B-38 and P1B-28 (- side of voltmeter). Apply mode voltage to P1A-54 and observe dc voltmeter.		+18 to +40 vdc						PITCH SERVO MON - ON		Observe STEER FLAG light on 978F-9A.	On
8-2	Remove ground from P1A-28 and observe the dc voltmeter.		+18 to +40 vdc						COMPUTER MONITOR GND - OFF		Observe STEER FLAG light.	On
8-3	Remove mode voltage from P1A-12 and observe dc voltmeter.		Less than +3.5 vdc						PITCH SERVO MON - OFF		Observe STEER FLAG light.	Off

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Figure 702

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STEP / TEST	PROCEDURE 1			PROCEDURE 2								
				978F-4A TEST SETTINGS					978F-9A TEST SETTINGS			
	PROCEDURE	INPUT	RESULT	CHANNEL SELECTOR	OFF MODE	INPUT SELECTOR	INPUT LINE	OUTPUT	LOGIC/ MONITOR INPUTS	SIGNAL INPUT	PROCEDURE	RESULT
				DC	NORMAL	LOCALIZER ROLL CMD	SIG	VAR PHASE 15 V	See step 0-1	RATE		
8-4	Apply mode voltage to P1A-12 Adjust synchro simulator control clockwise until dc voltmeter indicates zero. Read ac input between P1A-33 and P1A-23.		0.500 ±0.150 vac						PITCH SERVO MON - ON		Adjust SIMULATOR A control clockwise until STEER FLAG light goes off. Observe the external ac vtvm.	0.500 ±0.150 vac
8-5	Remove synchro simulator Y position from P1A-33 and observe dc voltmeter.		+18 to +40 vdc							MONITOR H or Z	Observe STEER FLAG light.	On
8-6	Adjust the compass simulator to 300 degrees and observe dc voltmeter.		Less than +3.5 vdc								Adjust SIMULATOR A control to 300 degrees. Observe the STEER FLAG light.	OFF

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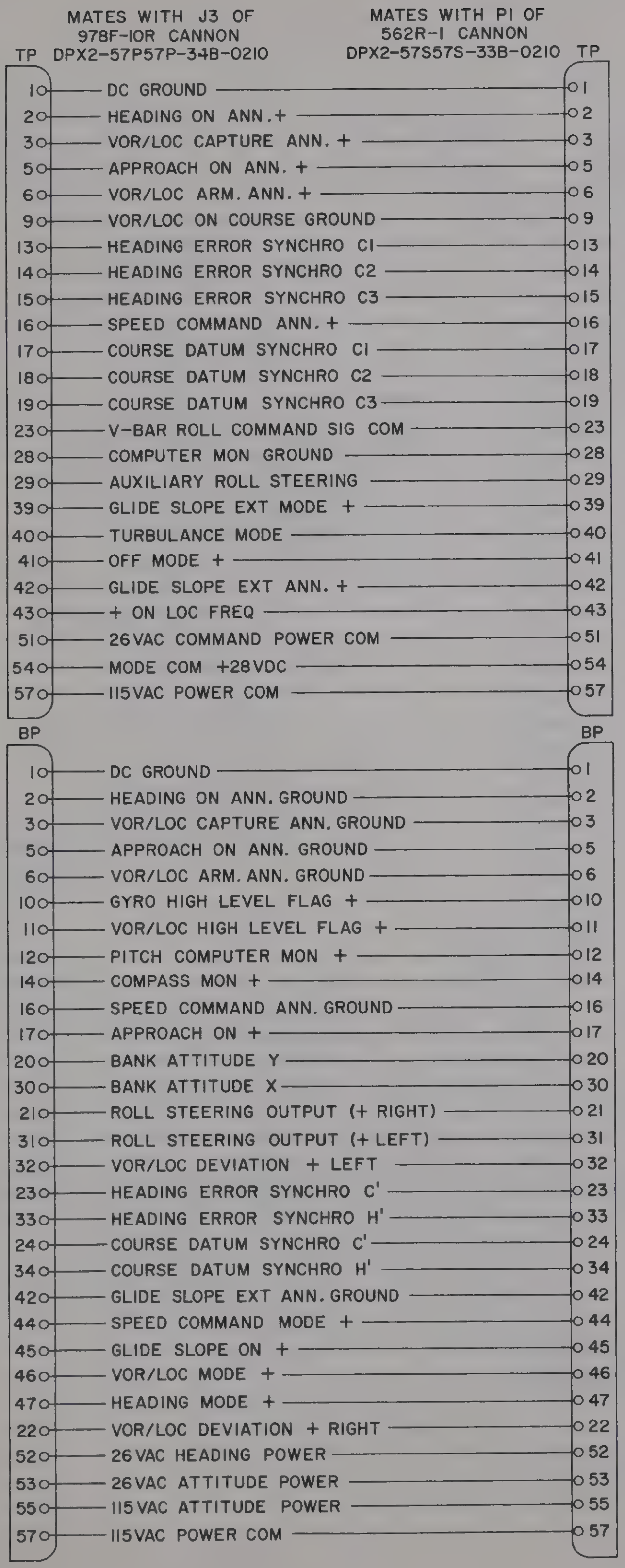
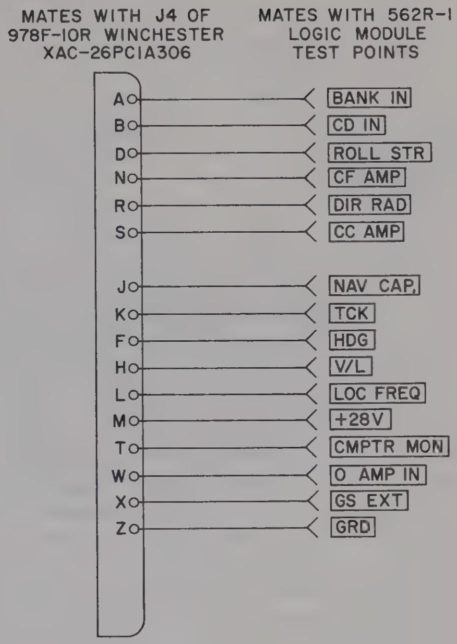
Figure 702



MATES WITH J3 OF 978F-10R CANNON DPX2-57P57P-34B-0210 TP		MATES WITH P1 OF 562R-1 CANNON DPX2-57S57S-33B-0210 TP
1	DC GROUND	1
2	HEADING ON ANN.+	2
3	VOR/LOC CAPTURE ANN. +	3
5	APPROACH ON ANN. +	5
6	VOR/LOC ARM. ANN. +	6
9	VOR/LOC ON COURSE GROUND	9
13	HEADING ERROR SYNCHRO C1	13
14	HEADING ERROR SYNCHRO C2	14
15	HEADING ERROR SYNCHRO C3	15
16	SPEED COMMAND ANN. +	16
17	COURSE DATUM SYNCHRO C1	17
18	COURSE DATUM SYNCHRO C2	18
19	COURSE DATUM SYNCHRO C3	19
23	V-BAR ROLL COMMAND SIG COM	23
28	COMPUTER MON GROUND	28
29	AUXILIARY ROLL STEERING	29
39	GLIDE SLOPE EXT MODE +	39
40	TURBULANCE MODE	40
41	OFF MODE +	41
42	GLIDE SLOPE EXT ANN. +	42
43	+ ON LOC FREQ	43
51	26VAC COMMAND POWER COM	51
54	MODE COM +28VDC	54
57	115VAC POWER COM	57

BP		BP
1	DC GROUND	1
2	HEADING ON ANN. GROUND	2
3	VOR/LOC CAPTURE ANN. GROUND	3
5	APPROACH ON ANN. GROUND	5
6	VOR/LOC ARM. ANN. GROUND	6
10	GYRO HIGH LEVEL FLAG +	10
11	VOR/LOC HIGH LEVEL FLAG +	11
12	PITCH COMPUTER MON +	12
14	COMPASS MON +	14
16	SPEED COMMAND ANN. GROUND	16
17	APPROACH ON +	17
20	BANK ATTITUDE Y	20
30	BANK ATTITUDE X	30
21	ROLL STEERING OUTPUT (+ RIGHT)	21
31	ROLL STEERING OUTPUT (+ LEFT)	31
32	VOR/LOC DEVIATION + LEFT	32
23	HEADING ERROR SYNCHRO C'	23
33	HEADING ERROR SYNCHRO H'	33
24	COURSE DATUM SYNCHRO C'	24
34	COURSE DATUM SYNCHRO H'	34
42	GLIDE SLOPE EXT ANN. GROUND	42
44	SPEED COMMAND MODE +	44
45	GLIDE SLOPE ON +	45
46	VOR/LOC MODE +	46
47	HEADING MODE +	47
22	VOR/LOC DEVIATION + RIGHT	22
52	26VAC HEADING POWER	52
53	26VAC ATTITUDE POWER	53
55	115VAC ATTITUDE POWER	55
57	115VAC POWER COM	57



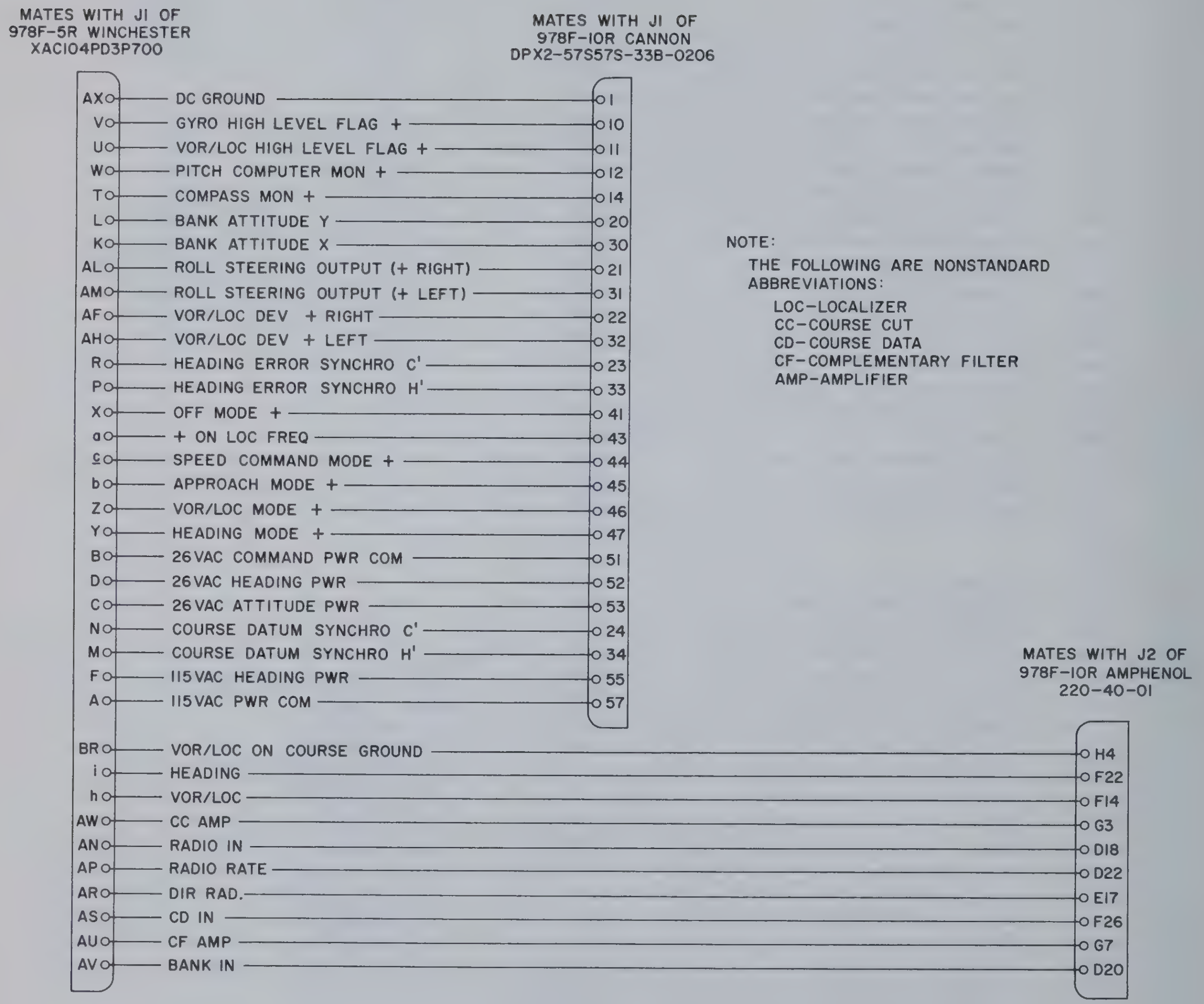
MATES WITH J4 OF 978F-10R WINCHESTER XAC-26PC1A306	MATES WITH 562R-1 LOGIC MODULE TEST POINTS
A	BANK IN
B	CD IN
D	ROLL STR
N	CF AMP
R	DIR RAD
S	CC AMP
J	NAV CAP.
K	TCK
F	HDG
H	V/L
L	LOC FREQ
M	+28V
T	CMPTR MON
W	O AMP IN
X	GS EXT
Z	GRD

NOTE:

THE FOLLOWING ARE NONSTANDARD ABBREVIATIONS:

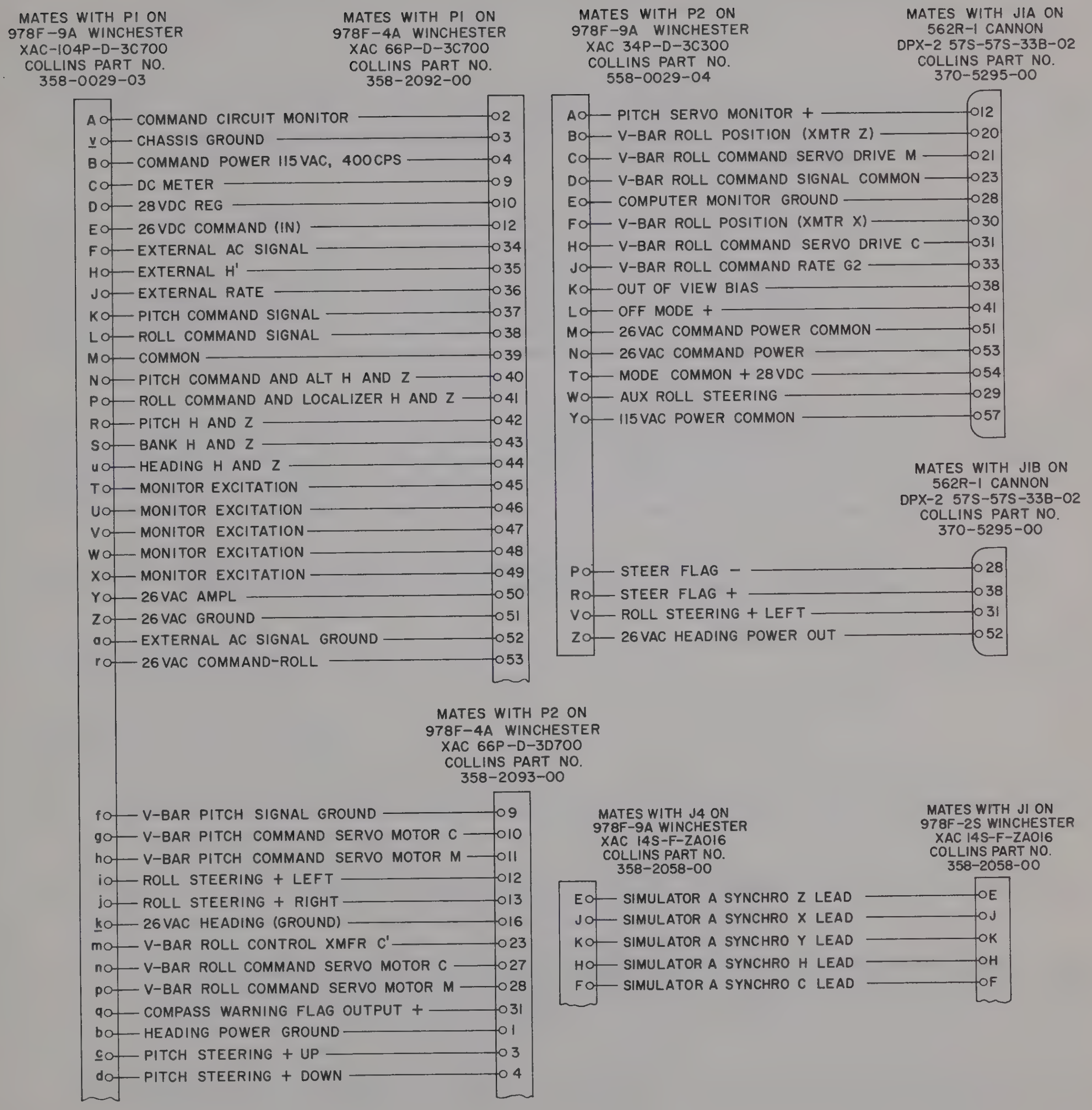
CC-COURSE CUT
CD-COURSE DATA
CF-COMPLIMENTARY FILTER
AMP-AMPLIFIER
CAP-CAPTURE
V/L-VOR/LOC
HDG-HEADING
GS-GLIDE SLOPE
O-TYPE "O" SERVO
LOC-LOCALIZER
TP-TOP PLUG
BP-BOTTOM PLUG

978F-5R, 978F-10R, and 562R-1 Interconnection Diagram (Sheet 1 of 2)
Figure 703


MATES WITH JI OF
978F-5R WINCHESTER
XACI04PD3P700
MATES WITH JI OF
978F-IOR CANNON
DPX2-57S57S-33B-0206
AX DC GROUND 1
V GYRO HIGH LEVEL FLAG + 10
U VOR/LOC HIGH LEVEL FLAG + 11
W PITCH COMPUTER MON + 12
T COMPASS MON + 14
L BANK ATTITUDE Y 20
K BANK ATTITUDE X 30
AL ROLL STEERING OUTPUT (+ RIGHT) 21
AM ROLL STEERING OUTPUT (+ LEFT) 31
AF VOR/LOC DEV + RIGHT 22
AH VOR/LOC DEV + LEFT 32
R HEADING ERROR SYNCHRO C' 23
P HEADING ERROR SYNCHRO H' 33
X OFF MODE + 41
a + ON LOC FREQ 43
c SPEED COMMAND MODE + 44
b APPROACH MODE + 45
Z VOR/LOC MODE + 46
Y HEADING MODE + 47
B 26VAC COMMAND PWR COM 51
D 26VAC HEADING PWR 52
C 26VAC ATTITUDE PWR 53
N COURSE DATUM SYNCHRO C' 24
M COURSE DATUM SYNCHRO H' 34
F 115VAC HEADING PWR 55
A 115VAC PWR COM 57
MATES WITH J2 OF
978F-IOR AMPHENOL
220-40-01
BR VOR/LOC ON COURSE GROUND H4
i HEADING F22
h VOR/LOC F14
AW CC AMP G3
AN RADIO IN D18
AP RADIO RATE D22
AR DIR RAD. E17
AS CD IN F26
AU CF AMP G7
AV BANK IN D20

NOTE:
THE FOLLOWING ARE NONSTANDARD ABBREVIATIONS:
LOC-LOCALIZER
CC-COURSE CUT
CD-COURSE DATA
CF-COMPLEMENTARY FILTER
AMP-AMPLIFIER

978F-5R, 978F-10R, and 562R-1 Interconnection Diagram (Sheet 2 of 2)
Figure 703


MATES WITH P1 ON 978F-9A WINCHESTER XAC-104P-D-3C700 COLLINS PART NO. 358-0029-03
MATES WITH P1 ON 978F-4A WINCHESTER XAC 66P-D-3C700 COLLINS PART NO. 358-2092-00
A — COMMAND CIRCUIT MONITOR — 2
v — CHASSIS GROUND — 3
B — COMMAND POWER 115VAC, 400CPS — 4
C — DC METER — 9
D — 28VDC REG — 10
E — 26VDC COMMAND (IN) — 12
F — EXTERNAL AC SIGNAL — 34
H — EXTERNAL H' — 35
J — EXTERNAL RATE — 36
K — PITCH COMMAND SIGNAL — 37
L — ROLL COMMAND SIGNAL — 38
M — COMMON — 39
N — PITCH COMMAND AND ALT H AND Z — 40
P — ROLL COMMAND AND LOCALIZER H AND Z — 41
R — PITCH H AND Z — 42
S — BANK H AND Z — 43
u — HEADING H AND Z — 44
T — MONITOR EXCITATION — 45
U — MONITOR EXCITATION — 46
V — MONITOR EXCITATION — 47
W — MONITOR EXCITATION — 48
X — MONITOR EXCITATION — 49
Y — 26VAC AMPL — 50
Z — 26VAC GROUND — 51
a — EXTERNAL AC SIGNAL GROUND — 52
r — 26VAC COMMAND-ROLL — 53
MATES WITH P2 ON 978F-9A WINCHESTER XAC 34P-D-3C300 COLLINS PART NO. 558-0029-04
MATES WITH J1A ON 562R-1 CANNON DPX-2 57S-57S-33B-02 COLLINS PART NO. 370-5295-00
A — PITCH SERVO MONITOR + — 12
B — V-BAR ROLL POSITION (XMTR Z) — 20
C — V-BAR ROLL COMMAND SERVO DRIVE M — 21
D — V-BAR ROLL COMMAND SIGNAL COMMON — 23
E — COMPUTER MONITOR GROUND — 28
F — V-BAR ROLL POSITION (XMTR X) — 30
H — V-BAR ROLL COMMAND SERVO DRIVE C — 31
J — V-BAR ROLL COMMAND RATE G2 — 33
K — OUT OF VIEW BIAS — 38
L — OFF MODE + — 41
M — 26VAC COMMAND POWER COMMON — 51
N — 26VAC COMMAND POWER — 53
T — MODE COMMON + 28VDC — 54
W — AUX ROLL STEERING — 29
Y — 115VAC POWER COMMON — 57
MATES WITH J1B ON 562R-1 CANNON DPX-2 57S-57S-33B-02 COLLINS PART NO. 370-5295-00
P — STEER FLAG − — 28
R — STEER FLAG + — 38
V — ROLL STEERING + LEFT — 31
Z — 26VAC HEADING POWER OUT — 52
MATES WITH P2 ON 978F-4A WINCHESTER XAC 66P-D-3D700 COLLINS PART NO. 358-2093-00
f — V-BAR PITCH SIGNAL GROUND — 9
g — V-BAR PITCH COMMAND SERVO MOTOR C — 10
h — V-BAR PITCH COMMAND SERVO MOTOR M — 11
i — ROLL STEERING + LEFT — 12
j — ROLL STEERING + RIGHT — 13
k — 26VAC HEADING (GROUND) — 16
m — V-BAR ROLL CONTROL XMFR C' — 23
n — V-BAR ROLL COMMAND SERVO MOTOR C — 27
p — V-BAR ROLL COMMAND SERVO MOTOR M — 28
q — COMPASS WARNING FLAG OUTPUT + — 31
b — HEADING POWER GROUND — 1
c — PITCH STEERING + UP — 3
d — PITCH STEERING + DOWN — 4
MATES WITH J4 ON 978F-9A WINCHESTER XAC 14S-F-ZA016 COLLINS PART NO. 358-2058-00
MATES WITH J1 ON 978F-2S WINCHESTER XAC 14S-F-ZA016 COLLINS PART NO. 358-2058-00
E — SIMULATOR A SYNCHRO Z LEAD — E
J — SIMULATOR A SYNCHRO X LEAD — J
K — SIMULATOR A SYNCHRO Y LEAD — K
H — SIMULATOR A SYNCHRO H LEAD — H
F — SIMULATOR A SYNCHRO C LEAD — F

978F-4A, 978F-9A, and 562R-1 Interconnection Diagram
Figure 704

562R-1 Roll Steering Computer - Troubleshooting

1. GENERAL.

CAUTION: EXERCISE CAUTION WHEN MAKING VOLTAGE MEASUREMENTS FROM TERMINALS ON THE TERMINAL BOARDS. ACCIDENTAL SHORTS BETWEEN TERMINALS COULD RESULT IN DAMAGE TO ELECTRICAL COMPONENTS.

The testing procedures given in figures 701 and 702 will isolate any fault to a specific stage, section, or channel of the roll steering computer. The logic diagram (figure 7) shows pictorially the stages being tested and will aid in the isolation of a faulty stage. The schematic diagrams, figures 806, 807, and 808, and the component location diagrams, figures 803, 804, and 805, are used to troubleshoot the particular faulty circuit. The logic module wiring diagram, figure 809, should be used in conjunction with the schematic diagrams to troubleshoot the unit.

The technician will probably find it useful to construct extender cables so that the roll steering computer may be tested with the terminal boards separated. Four extenders are necessary, and they may be constructed from four Winchester XSRM34PNSS1000 connectors, Collins part number 372-5855-010, and four Winchester XSRM34SNSS2000 connectors, Collins part number 372-5856-010. Use one-to-one wiring and check the extenders for continuity before using.

CAUTION: CARE SHOULD BE EXERCISED WHEN MATING THE EXTENDERS TO THE TERMINAL BOARDS TO AVOID DAMAGING THE CONNECTORS.

Figures 801 and 802 are keyed to the testing section and list additional tests, if necessary, to isolate the trouble.

2. POWER SUPPLY REPAIRS.

NOTE: It is possible to burn out transistors Q36 and Q37 of the power supply by shorting the +28 volts dc regulated to ground. Care must be taken when making voltage measurements at individual terminals on the terminal boards.

A. If Q36 or Q37 is replaced, it is necessary to select and replace a new R95 in the power supply. Use the following procedure to determine the correct value of R95.

(1) Remove R95 and connect a two-foot length of insulated wire to each of the terminals to which R95 was connected, and route the wires so that the loose ends are external to the unit when TB3 is replaced.

(2) Connect a ±1 percent, 0- to 99,999-ohm decade resistance box to the two wires, and set the decade box at 50,000 ohms.

(3) Connect a Weston Model 930 or equivalent dc voltmeter between any red terminal (+28 volts dc regulated) and ground.

(4) Apply power to the roll steering computer.

(5) Adjust the decade resistance box until the dc voltmeter indicates between 27.95 and 28.05 volts dc.

(6) Readjust the decade resistance box to the nearest standard value of 1 percent resistor. The final value of the regulated dc voltage should be between 27.80 and 28.20 volts dc.

(7) Remove power from the roll steering computer, remove the decade resistance box, TB3, and the temporary wires, and install R95 determined in step (6).

STEP OF TESTING PROCEDURE	FURTHER PROCEDURES AND COMMENTS	PROBABLE CAUSE OF ABNORMAL RESULTS
0-1	Failure of the lights on the 978F-10R to illuminate indicates trouble in the POWER SUPPLY section of TB2 or in its input circuit.	Power transformer, rectifiers, regulators.
1-1	The dc bias voltage of the bank input amplifier is being checked. Use the multimeter to make additional continuity checks.	Bias resistors are bad; Q25 or Q26 of TB1 is faulty.
1-2	The dc bias voltage of the course datum input amplifier is being checked. Use the multimeter to make additional continuity checks.	Bias resistors are bad; Q11 or Q12 of TB1 is faulty.
1-3	The dc bias voltage of the radio deviation input amplifier is being checked. Use the multimeter to make additional continuity checks.	Bias resistors are bad; Q20 or Q21 of TB1 is faulty.
1-4	The dc bias voltage of the course cut limiter amplifier is being checked. Use the multimeter to make additional continuity checks.	Bias resistors are bad; Q35 or Q36 of TB1 is faulty.
1-5	The dc bias voltage of the complementary filter amplifier is being checked. Use the multimeter to make additional continuity checks.	Bias resistors are bad; Q10 or Q11 of TB3 is faulty.

562R-1 Troubleshooting Information (Sheet 1 of 8)
Figure 801

STEP OF TESTING PROCEDURE	FURTHER PROCEDURES AND COMMENTS	PROBABLE CAUSE OF ABNORMAL RESULTS
2-1	The dc bias voltage of the ROLL STEERING section is being checked. With the computer in external steer command, there should be no bank command present.	Check the phase detector and the roll steer output amplifier.
3-1	An ac voltage is applied to the BANK section while the 562R-1 is in external steer command mode. The output of the ROLL STEERING section indicates the correction necessary to maintain a wings-level attitude.	Check the BANK section input circuits and the bank input amplifier.
3-2	If step 3-1 indicated proper operation, any trouble would lie between the DISPLAY section of the logic module and P1A-29.	Poor connection.
4-1	The 562R-1 should be in VOR only mode. With a course datum input, the time constant of the complementary filter is being checked. Observe the results of tests 5-1 and 6-1 before trying to determine the cause of the indicated trouble.	If the output meter does not indicate an output, the problem would probably be in the COURSE DATUM section. Perform the course datum gain checks before checking the complementary filter. If the time constant is too long, check the low-pass filters in the complementary filter.
5-1 and 5-2	The time constant of the complementary filter is being checked with the 562R-1 in localizer only or localizer approach mode.	If test 4-1 indicated properly but 5-1 does not, check the transistor switches in the complementary filter.
6-1	The time constant of the complementary filter is being checked with the 562R-1 in approach or extension mode.	If tests 4-1 through 6-1 do not give the proper indication and the course datum gain checks indicate proper operation, check the low-pass filters in the complementary filter.

562R-1 Troubleshooting Information (Sheet 2 of 8)
Figure 801

STEP OF TESTING PROCEDURE	FURTHER PROCEDURES AND COMMENTS	PROBABLE CAUSE OF ABNORMAL RESULTS
7-1	The 562R-1 is in VOR only mode and nav on course ground is present, so no course datum is applied to the course cut limiter. Course datum will be applied directly to the BANK LIMIT section.	If trouble has been occurring in all tests using course datum input, check the quadrature rejection network and the course datum input amplifier in the COURSE DATUM section. If both the bank gain and the course datum gain tests indicated low, check the roll steering output amplifier. If the course datum gain test indicated high, check the BANK LIMIT section.
7-2	The level of the rool steering signal will be lowered when the 562R-1 switches to track mode.	If the level of the roll steering signal is not lowered when the 562R-1 switches to track mode, check Q15 and Q16 of the BANK LIMIT section. If the 562R-1 does not switch to track mode, the trouble probably lies in the beam sensor. Refer to the beam sensor capture tests before checking the beam sensor.
8-1	When the 562R-1 is switched to localizer, no course datum is used to compute the roll command.	Check the course cut limiter.
9-1	With the 562R-1 in VOR only mode, wait for the beam sensor to go to track condition.	Troubleshoot this by use of the beam sensor tests which follow.
9-2	The course cut limiter is being checked.	If it is not possible to obtain a zero roll steer output, check the (cont)

562R-1 Troubleshooting Information (Sheet 3 of 8)
Figure 801

STEP OF TESTING PROCEDURE	FURTHER PROCEDURES AND COMMENTS	PROBABLE CAUSE OF ABNORMAL RESULTS
9-2 (Cont)		(Cont) COURSE DATUM section. If the amount of course datum required to cancel the radio input does not fall within the limits, check the course cut limiter.
10-1	The radio input signal is removed. The 562R-1 is switched from nav/localizer mode to external steer command mode. The bank command channel will be grounded at the input to the BANK LIMIT section, and with no bank attitude input, there will be no roll steering command.	Check switch Q29 at the input to the BANK LIMIT section.
11-1	There is still a course datum input, but with the 562R-1 in heading mode, all inputs to the BANK LIMIT section are removed, and with no bank attitude input there will be no roll steering output.	If there is an output, check the strapping the HDG LOGIC section of the logic module. Check the transistor switches in the COURSE CUT LIMITER section.
12-1	The 562R-1 is in heading mode and 2 volts of heading error is applied. The 562R-1 will indicate the amount of bank command required for the aircraft to roll back on the selected heading.	If there is no roll steering output, check switch Q27 in the HEADING section. Check the quadrature rejection network in the HEADING section. The remainder of the command channel has already been checked.
13-1	The maximum bank angle that may be commanded by the 562R-1 is being checked. No matter how large the heading error is (in this case it is over 40 degrees), the BANK LIMIT section will have a maximum output which will be cancelled by 5.9 volts of bank attitude.	The BANK section has already been checked, so this will be a check of the BANK LIMIT section only. If the amount of bank required to cancel the heading error is too large, check the limiters in the BANK LIMIT section. (Cont)

562R-1 Troubleshooting Information (Sheet 4 of 8)
Figure 801

STEP OF TESTING PROCEDURE	FURTHER PROCEDURES AND COMMENTS	PROBABLE CAUSE OF ABNORMAL RESULTS
13-1 (Cont)		(Cont) If the bank required to cancel the bank attitude is too small, check the amplifiers in the BANK LIMIT section.
14-1	With a large radio deviation input, the maximum bank angle that the 562R-1 will command is being checked. The command is great enough to cause the course cut limiter to be saturated.	Any trouble indicated by this would be in the BANK LIMIT section.
15-1	With the same radio input, the 562R-1 is switched to approach mode. The bank limit will be lowered in approach mode.	If the two previous tests indicated proper operation of the bank limiter, check the limit adjust circuits in the BANK LIMIT section.
16-1	The radio input is removed, the 562R-1 is not in heading mode, but an ac input is applied to the heading error input terminals.	If there is a roll steering signal, check switch Q27 in the HEADING section.
17-1	The 562R-1 is in VOR only mode and a radio deviation signal is applied to the computer. This is a check of the RADIO section and the radio rate limiter since it is assumed that the remainder of the command channel has checked out satisfactorily.	If the gain is low, the problem will probably be in the amplifiers of the RADIO section. If the signal is lost, check at the RADIO IN and the DIR RAD test jacks to find where the signal was lost.
17-2	The 562R-1 is in localizer only mode, so the gain of the radio channel will be reduced.	If the gain is not reduced when switched to localizer, check Q48 in the radio rate limiter, check the rate limit adjust circuit in the radio rate limiter.
18-1	Step 18 is checking part of the mode generator.	If the HDG light does not come on, remove the cable from the test (Cont)

562R-1 Troubleshooting Information (Sheet 5 of 8)
Figure 801

STEP OF TESTING PROCEDURE	FURTHER PROCEDURES AND COMMENTS	PROBABLE CAUSE OF ABNORMAL RESULTS
18-1 (Cont)		(Cont) set to the logic module and measure the voltage at the logic module test points to ensure that the lights on the 978F-10R are not burned out. If the dc voltage at the HDG test jack does not indicate properly, check for a loose connection between P1B-47 and the HDG test point.
18-2		Check Q1, Q3, CR88, and CR89 in the mode generator.
18-3	The 562R-1 should be back in heading mode.	Check the mode generator.
18-4	After capturing the radio beam, the 562R-1 will not be in heading mode.	Check the logic module strapping to see if it is correct and secure; check Q7 and Q8 in the mode generator.
19-1	The navigation receiver is tuned to a localizer frequency and a localizer deviation signal, too large to permit capture, is applied.	
19-2	The navigation receiver will not apply the flag voltage to the 562R-1 while the nav receiver control is being switched. The 15-second delay will remove transients from the unit.	
19-3	The beam sensor will be armed for capture when nav super flag voltage is applied to P1B-11.	If the NAV ARM light does not come on, check Q54 and Q48 of the ANNUNCIATOR DRIVE section. If they are OK, perform the remainder of the beam sensor (Cont)

562R-1 Troubleshooting Information (Sheet 6 of 8)
Figure 801

STEP OF TESTING PROCEDURE	FURTHER PROCEDURES AND COMMENTS	PROBABLE CAUSE OF ABNORMAL RESULTS
19-3 (Cont)		(Cont) tests to determine where the trouble lies.
20-1	The localizer deviation signal is reduced until the 562R-1 captures the radio beam. The nav capture ground will be present at P1A-9 when the 562R-1 has captured the radio beam.	If the 562R-1 does not capture the radio beam when the deviation reaches the proper level, check the radio input to the beam sensor. Check C1 and Q1 at the input to the beam sensor. If the 562R-1 does not capture the radio beam at all, check Q10 of the beam sensor, then check Q3. If they are operating properly, the trouble probably lies in the input circuitry to the beam sensor. Also check Q30 and amplifier Q31-Q32 in the RADIO RATE LIMITER section.
21-1	The 562R-1 is switched to VOR only mode and the radio deviation signal is too large to permit capture. The beam sensor should be armed for capture.	If the beam sensor has captured radio beam before the deviation is reduced, the problem would be in the input circuitry of the beam sensor. The mode generator has previously been checked.
21-2	The radio deviation signal is reduced until the 562R-1 captures the VOR beam.	If the 562R-1 captures the radio beam at the wrong level, check the input circuitry of the beam sensor. Pay particular attention to Q1 and C1.

562R-1 Troubleshooting Information (Sheet 7 of 8)
Figure 801

STEP OF TESTING PROCEDURE	FURTHER PROCEDURES AND COMMENTS	PROBABLE CAUSE OF ABNORMAL RESULTS
22-1	If the 562R-1 loses mode voltage at P1B-46, it will reset to NAV ARM when the mode voltage is returned.	If the NAV ON light does not go off, check Q10 of the beam sensor. If both lights do not operate properly, check the output transistors of the ANNUNCIATOR DRIVE section.
23-1	This is a check of the timer circuit in the beam sensor. Wait for the timer to run down before starting the check.	Check capacitor C4 and transistors Q5, Q6, and Q7 of the beam sensor.
24-1	Wait for the timer to run down before starting the off course check.	Check the timer circuit in the beam sensor.
25-0	Step 25 is checking the MONITOR section of the 562R-1. The MONITOR section has two functions: to provide a computer monitor ground when the computer is operating properly and to provide a steer flag voltage when the steering information is reliable. The steer flag function will be checked along with the converter and servoamplifier.	If trouble occurs, start checking at transistor Q13 and work back through Q 9 and Q10 to the inputs to the MONITOR section.

562R-1 Troubleshooting Information (Sheet 8 of 8)
Figure 801

STEP OF TESTING PROCEDURE	FURTHER PROCEDURES AND COMMENTS	PROBABLE CAUSE OF ABNORMAL RESULTS
1-1	The servochannel is being tested with no input. Proceed with the testing. Any (Cont)	

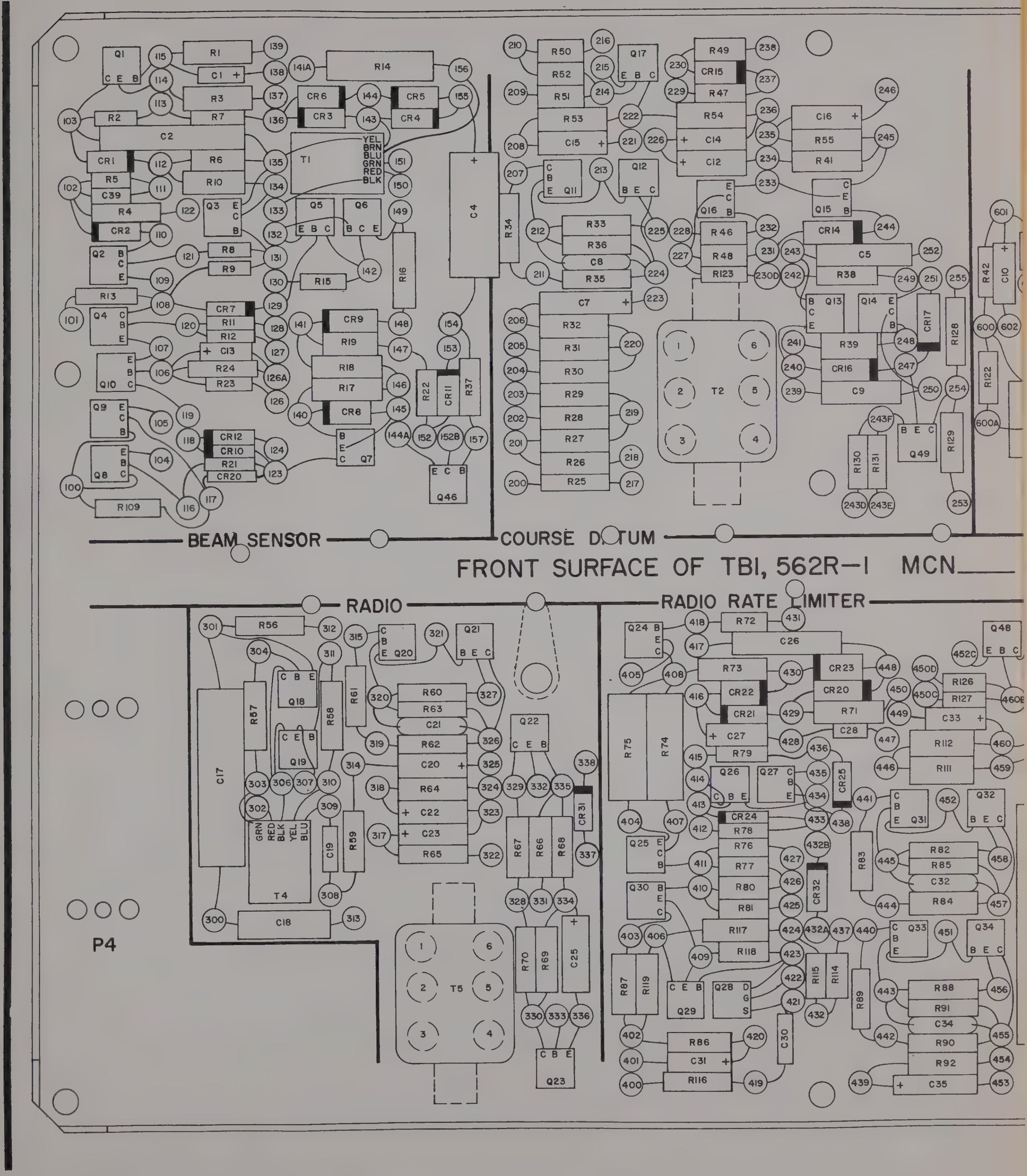
562R-1 Servochannel Troubleshooting Information (Sheet 1 of 3)
Figure 802

STEP OF TESTING PROCEDURE	FURTHER PROCEDURES AND COMMENTS	PROBABLE CAUSE OF ABNORMAL RESULTS
1-1 (Cont)	(Cont) trouble indicated by this step should show up in one or more of following steps.	
2-1	The voltage between P1A-31 and P1A-53 is being measured.	Check T1 of TB2.
3-1	If the gain is low, the trouble probably lies in the SERVO AMPLIFIER section. Perform the remainder of the gain checks before doing any de-bugging in the circuit.	
3-2	Same as step 3-1.	If the polarity of the output is wrong, check the chopper at the input to the CONVERTER section. Check quadrature rejection network Q27 and Q28.
4-1	Off mode voltage is applied, opening the converter channel directly after limiter CR38-CR41.	Check switch Q23 of the CONVERTER section.
5-1	Out-of-view condition prevents any roll command.	Check Q23 and CR91, CR92 of the CONVERTER section.
6-1	The position x input is applied directly after limiter CR38-CR41. If step 6-1 indicates correctly but either 3-1 or 3-2 do not, check the stages prior to the position X input.	Wait until further gain checks are made before making final stage measurements.
6-2	Same as step 6-1.	If the output indicates problems with polarity, check the quadrature rejection network.
7-1	The rate feedback signal is applied at the input to the emitter-follower amplifier in the CONVERTER section. If step 1-1 indicates properly but any of the previous steps have not, the problem lies between the input to the CONVERTER section and amplifier Q24-Q26.	If the indication of step 7-1 is low, check the signal level at the O AMP IN test jack on the logic module. To obtain a 5-volt output, input to the servoamplifier (Cont)

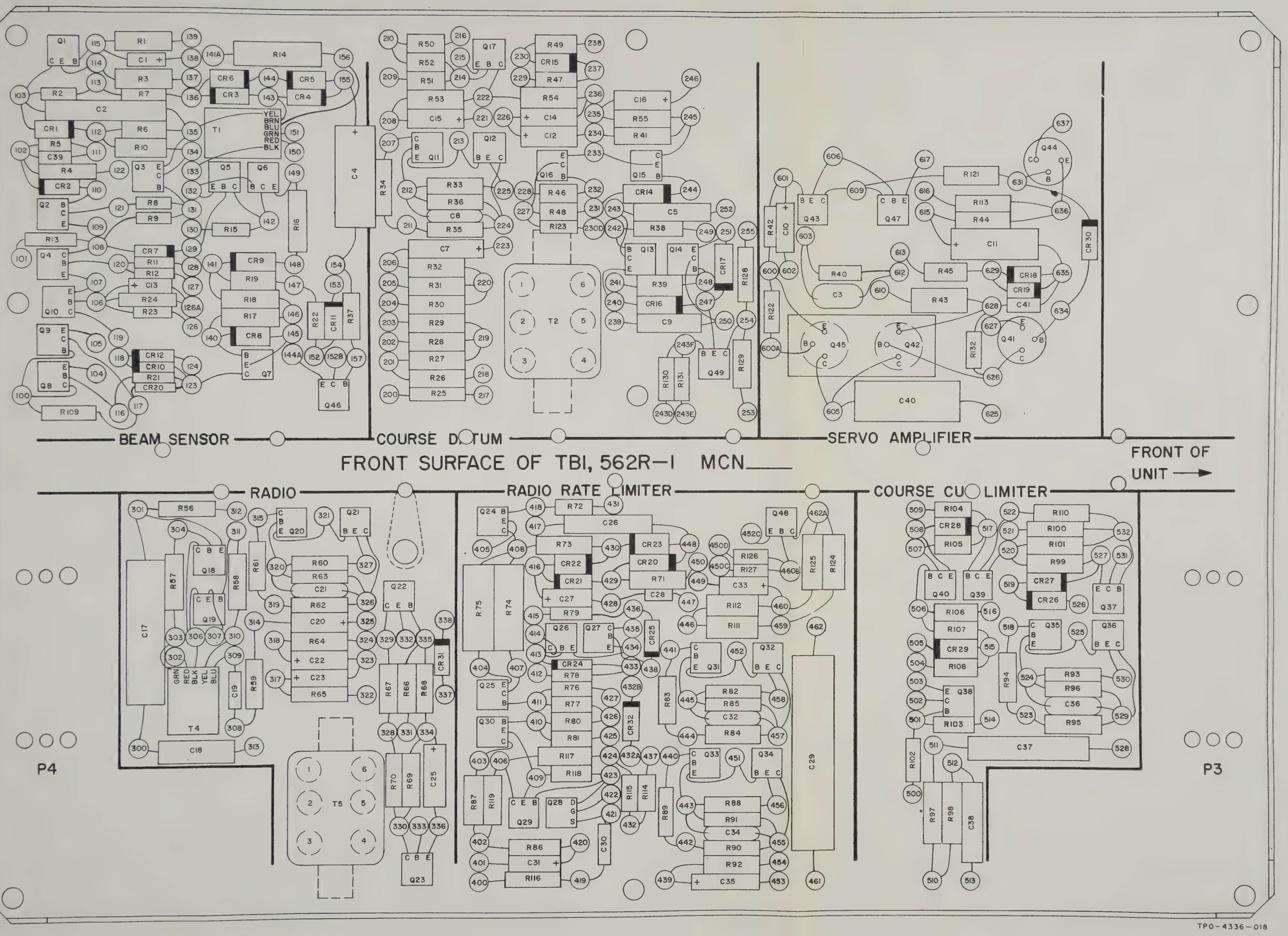
562R-1 Servochannel Troubleshooting Information (Sheet 2 of 3)
Figure 802

STEP OF TESTING PROCEDURE	FURTHER PROCEDURES AND COMMENTS	PROBABLE CAUSE OF ABNORMAL RESULTS
7-1 (Cont)		(Cont) should be approximately 25 mv rms. This reading will indicate if the trouble lies in the servoamplifier in the amplifier and quadrature rejection network of the CONVERTER section.
7-2	Same as Step 7-1.	Same as step 7-1.
8-1	It is assumed that the CONVERTER and SERVO AMPLIFIER sections have tested out OK and that any trouble indicated by steps 8-1 thru 8-6 lies in the steer flag monitor circuit.	Check the MONITOR section from CR27 thru Q15.

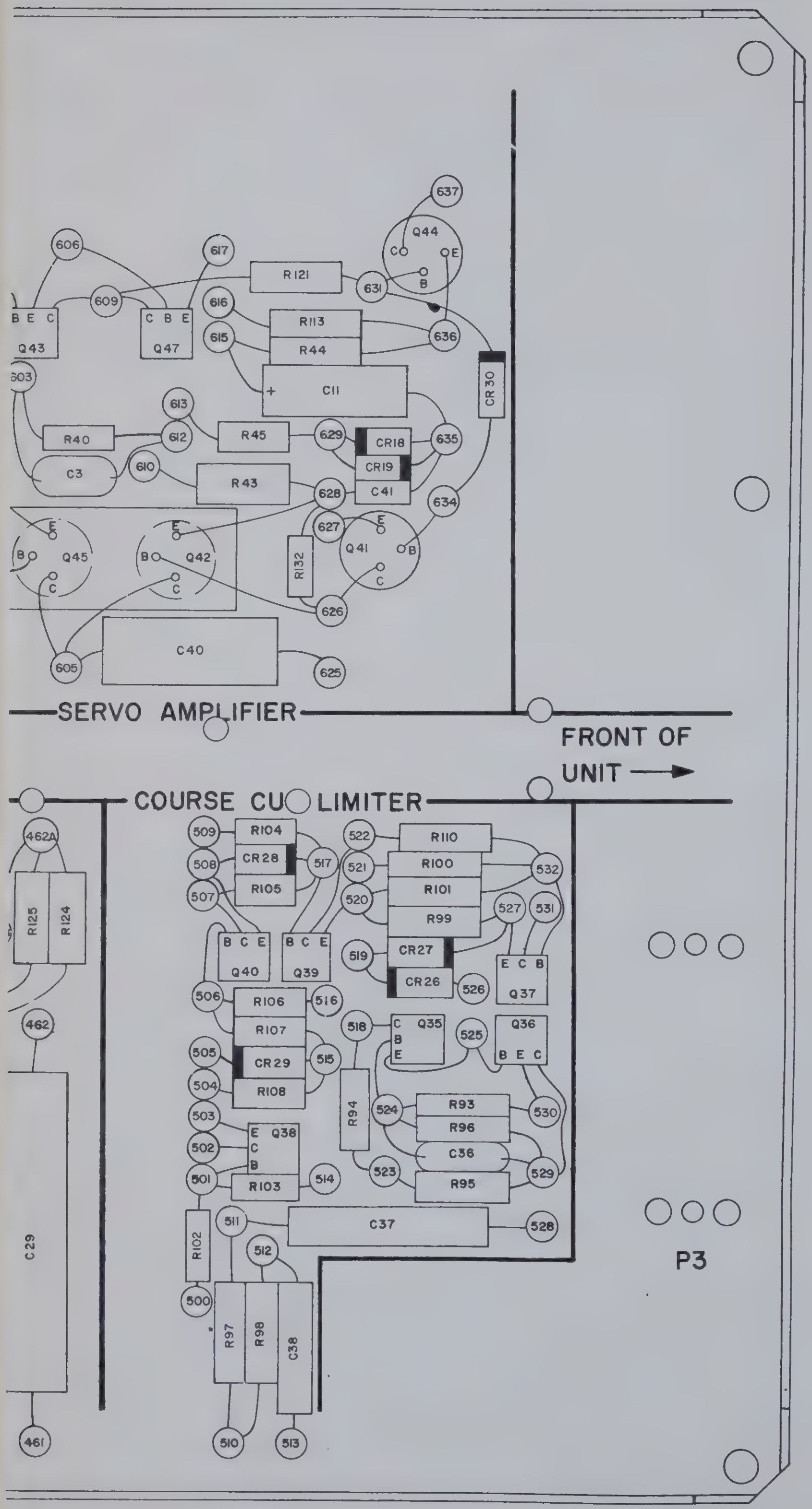
562R-1 Servochannel Troubleshooting Information (Sheet 3 of 3)
Figure 802


BEAM SENSOR
COURSE DATUM
FRONT SURFACE OF TBI, 562R-I MCN
RADIO
RADIO RATE LIMITER
P4
Q1
R1
C1
R14
R3
R7
R2
C2
CR6
CR3
CR5
CR4
T1
YEL
BRN
BLU
GRN
RED
BLK
CR1
R6
R5
R10
C39
R4
CR2
Q3
Q5
Q6
C4
R34
R16
Q2
R8
R9
R15
R13
Q4
CR7
R11
R12
C13
R24
R23
Q10
CR9
R19
R18
R17
CR8
R22
CR11
R37
Q9
Q8
CR12
CR10
R21
CR20
Q7
Q46
R109
R50
R52
R51
R53
C15
Q17
Q11
Q12
R33
R36
C8
R35
C7
R32
R31
R30
R29
R28
R27
R26
R25
R49
CR15
R47
R54
C14
C12
Q16
R46
R48
R123
T2
C16
R55
R41
Q15
CR14
C5
R38
Q13
Q14
CR17
R39
CR16
C9
R128
Q49
R130
R131
R129
R42
C10
R122
R56
Q20
Q21
Q18
R57
R58
R61
C17
Q19
R60
R63
C21
R62
C20
R64
C22
C23
R65
Q22
CR31
R67
R66
R68
T4
C19
R59
C18
T5
R70
R69
C25
Q23
Q24
R72
C26
R73
CR23
CR22
CR20
CR21
R71
C27
C28
R79
R75
R74
Q26
Q27
CR25
CR24
R78
R76
R77
R80
R81
R117
R118
Q25
Q30
CR32
R83
R87
R119
Q29
Q28
R115
R114
R89
R86
C31
R116
C30
Q48
R126
R127
C33
R112
R111
Q31
Q32
R82
R85
C32
R84
Q33
Q34
R88
R91
C34
R90
R92
C35

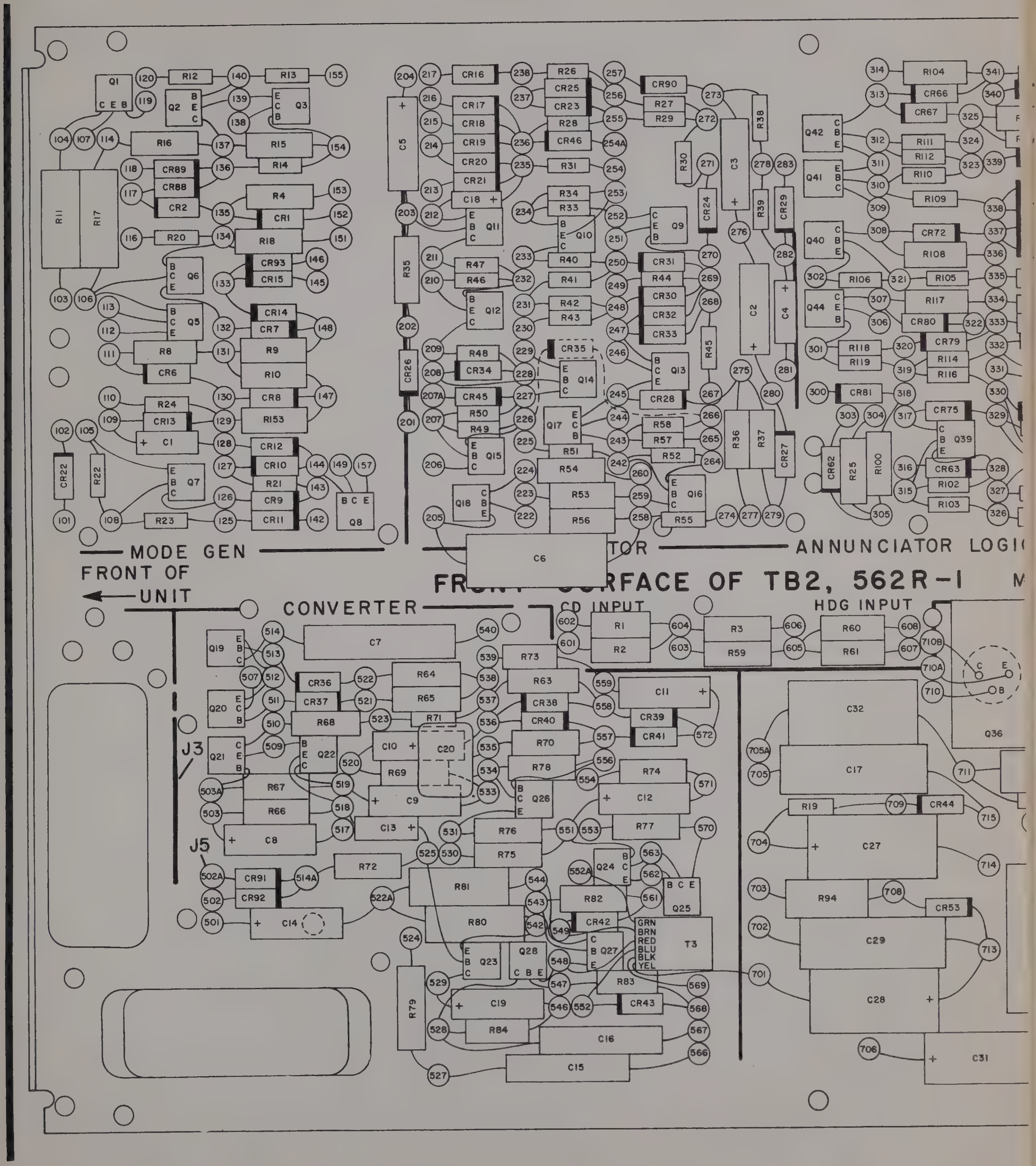
562R-1 Terminal Board 1, Parts Location
Figure 803


BEAM SENSOR
COURSE DATUM
SERVO AMPLIFIER
FRONT SURFACE OF TBI, 562R-1 MCN____
FRONT OF UNIT →
RADIO
RADIO RATE LIMITER
COURSE CUT LIMITER
P4
P3
T1
T2
T4
T5
TPO-4336-018

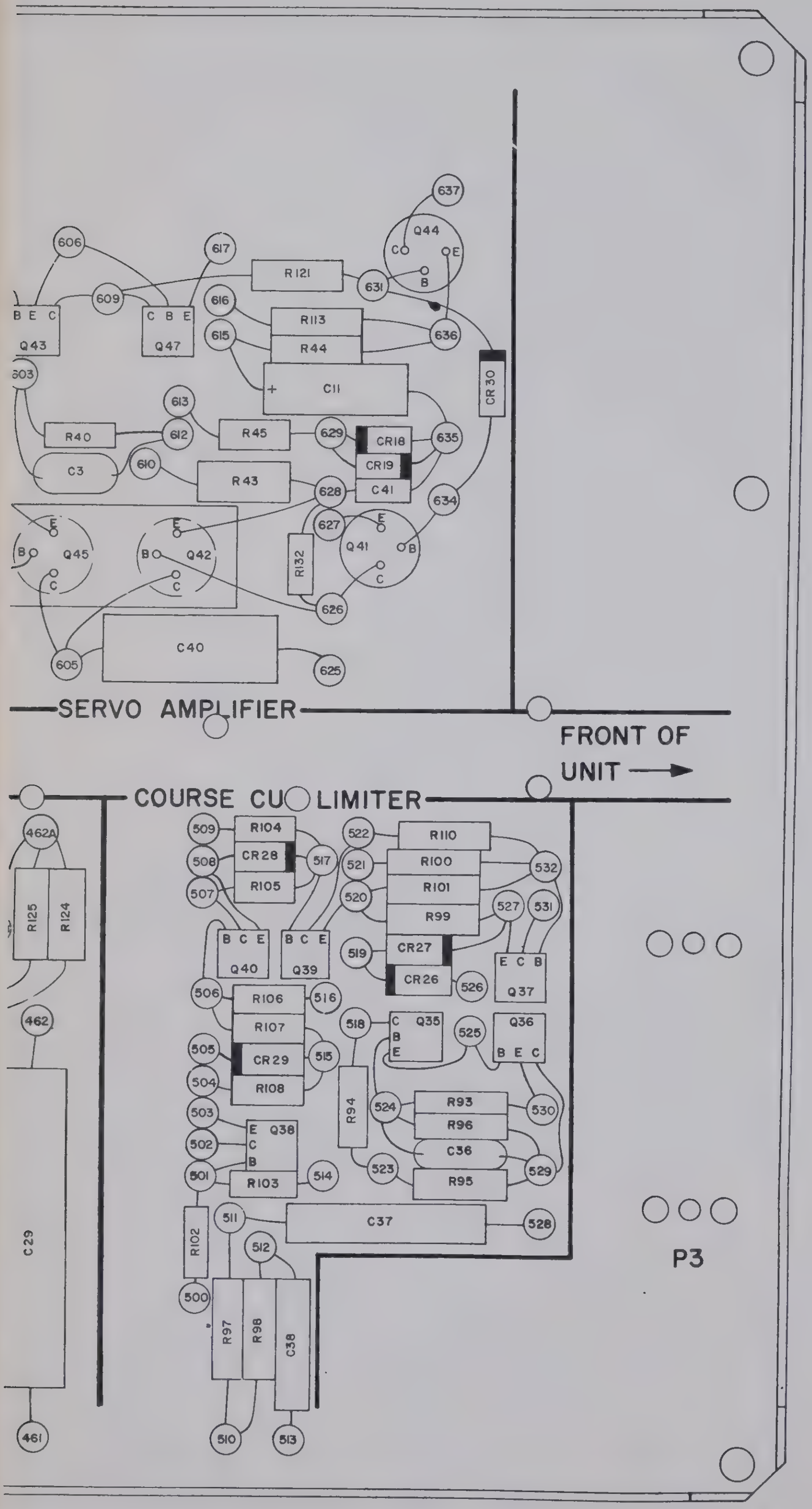
562R-1 Terminal Board 1, Parts Location
Figure 803


SERVO AMPLIFIER
COURSE CU LIMITER
FRONT OF UNIT
P3
Q44
Q43
Q47
Q45
Q42
Q41
R121
R113
R44
C11
CR30
R40
R45
CR18
CR19
C41
C3
R43
R132
C40
R104
CR28
R105
R110
R100
R101
R99
CR27
CR26
Q40
Q39
Q37
Q36
Q35
R106
R107
CR29
R108
Q38
R103
R94
R93
R96
C36
R95
C37
R102
R97
R98
C38
R125
R124
C29
637
606
617
609
631
616
636
615
603
613
612
629
635
610
628
634
627
626
605
625
509
508
507
522
521
520
517
532
527
531
519
526
506
516
518
525
505
515
504
503
524
530
502
501
514
523
529
511
512
528
500
510
513
462A
462
461

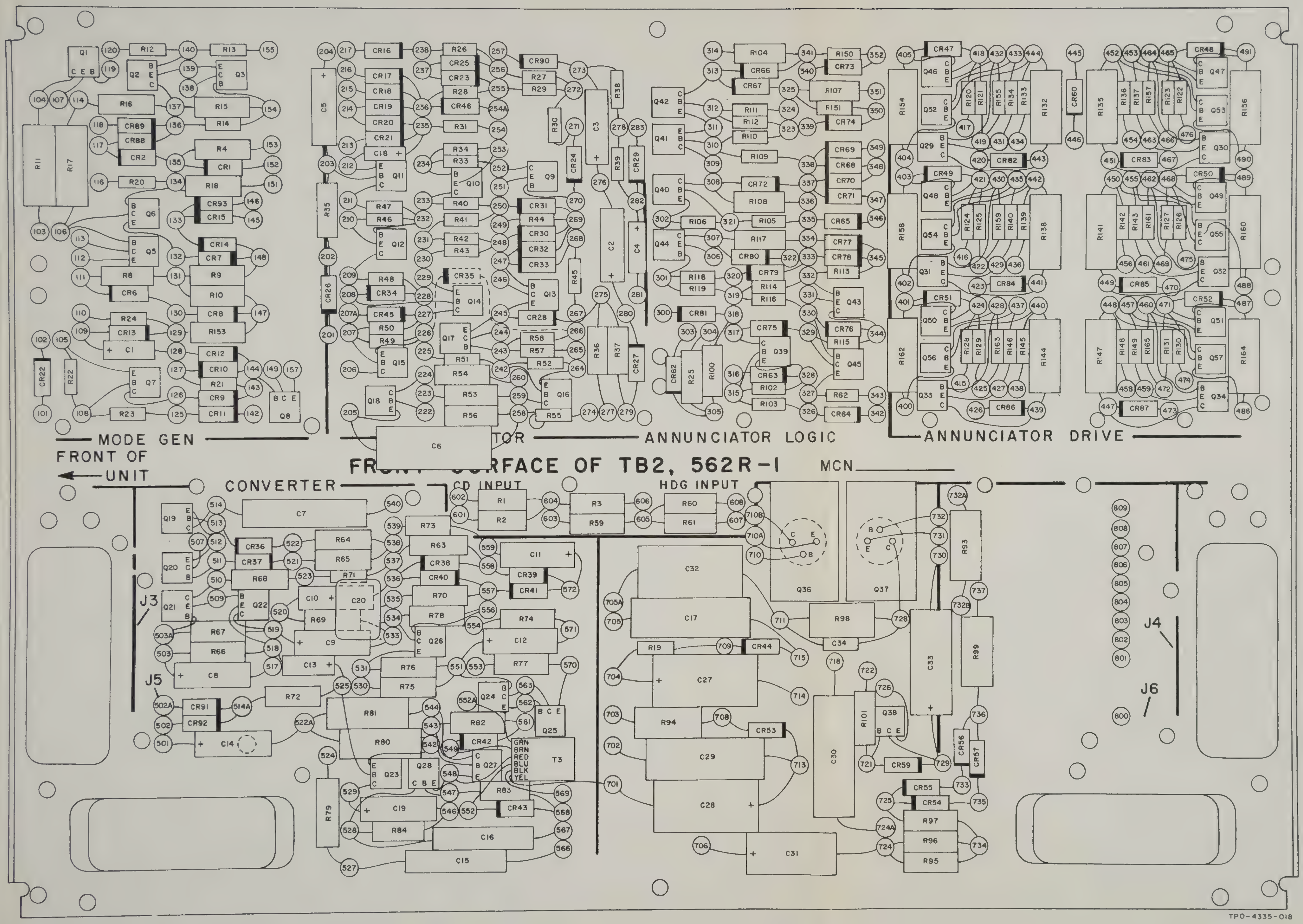
TPO-4336-018


MODE GEN
FRONT OF UNIT
CONVERTER
FRONT SURFACE OF TB2, 562R-1
TOR
ANNUNCIATOR LOGI
CD INPUT
HDG INPUT
J3
J5
Q1
Q2
Q3
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
Q21
Q22
Q23
Q24
Q25
Q26
Q27
Q28
Q36
Q39
Q40
Q41
Q42
Q44
T3
GRN
BRN
RED
BLU
BLK
YEL
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
C27
C28
C29
C31
C32
R1
R2
R3
R4
R8
R9
R10
R11
R12
R13
R14
R15
R16
R17
R18
R19
R20
R21
R22
R23
R24
R25
R26
R27
R28
R29
R30
R31
R33
R34
R35
R36
R37
R38
R39
R40
R41
R42
R43
R44
R45
R46
R47
R48
R49
R50
R51
R52
R53
R54
R55
R56
R57
R58
R59
R60
R61
R63
R64
R65
R66
R67
R68
R69
R70
R71
R72
R73
R74
R75
R76
R77
R78
R79
R80
R81
R82
R83
R84
R94
R100
R102
R103
R104
R105
R106
R108
R109
R110
R111
R112
R114
R116
R117
R118
R119
R153
CR2
CR6
CR7
CR8
CR9
CR10
CR11
CR12
CR13
CR14
CR15
CR16
CR17
CR18
CR19
CR20
CR21
CR22
CR23
CR24
CR25
CR26
CR27
CR28
CR29
CR30
CR31
CR32
CR33
CR34
CR35
CR36
CR37
CR38
CR39
CR40
CR41
CR42
CR43
CR44
CR45
CR46
CR53
CR62
CR63
CR66
CR67
CR72
CR75
CR79
CR80
CR81
CR88
CR89
CR90
CR91
CR92
CR93

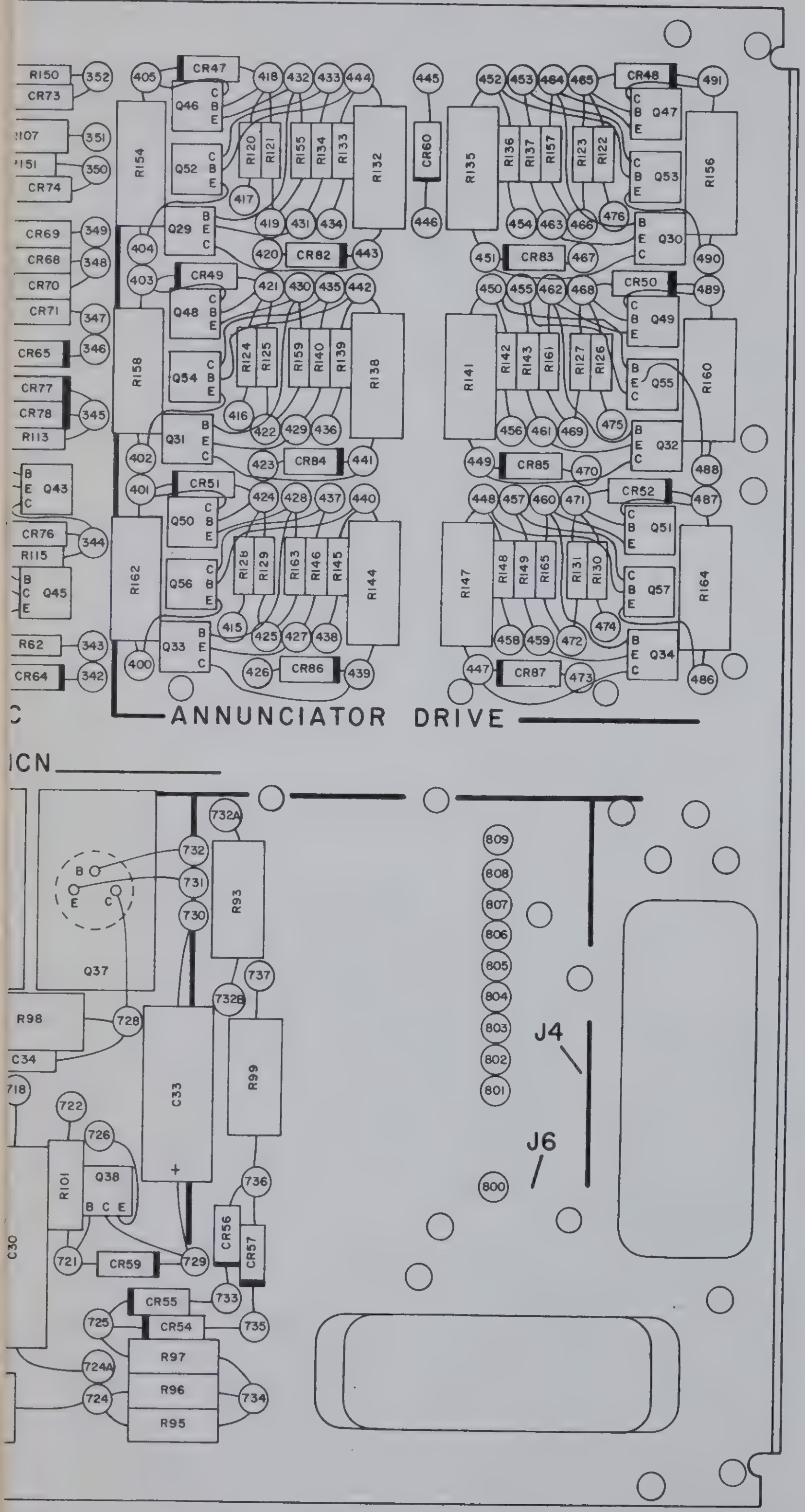
562R-1 Terminal Board 2, Parts Location
Figure 804


637
Q44
C
E
B
606
617
R121
631
B E C
609
C B E
Q43
Q47
616
R113
636
615
R44
603
C11
+
CR30
613
R40
612
R45
629
CR18
635
C3
610
R43
CR19
628
C41
634
E
E
627
E
B
Q45
B
Q42
Q41
B
C
C
R132
C
626
C40
605
625
SERVO AMPLIFIER
FRONT OF UNIT
COURSE CU LIMITER
462A
509
R104
522
R110
508
CR28
517
521
R100
532
507
R105
R101
520
527
531
R125
R124
R99
B C E
B C E
519
CR27
E C B
Q40
Q39
CR26
526
Q37
506
R106
516
462
R107
518
C
Q35
Q36
B
525
E
505
CR29
515
B E C
504
R108
R94
524
R93
530
503
R96
E
Q38
502
C
C36
B
529
523
R95
501
R103
514
511
C37
528
C29
R102
512
500
R97
R98
C38
461
510
513
P3

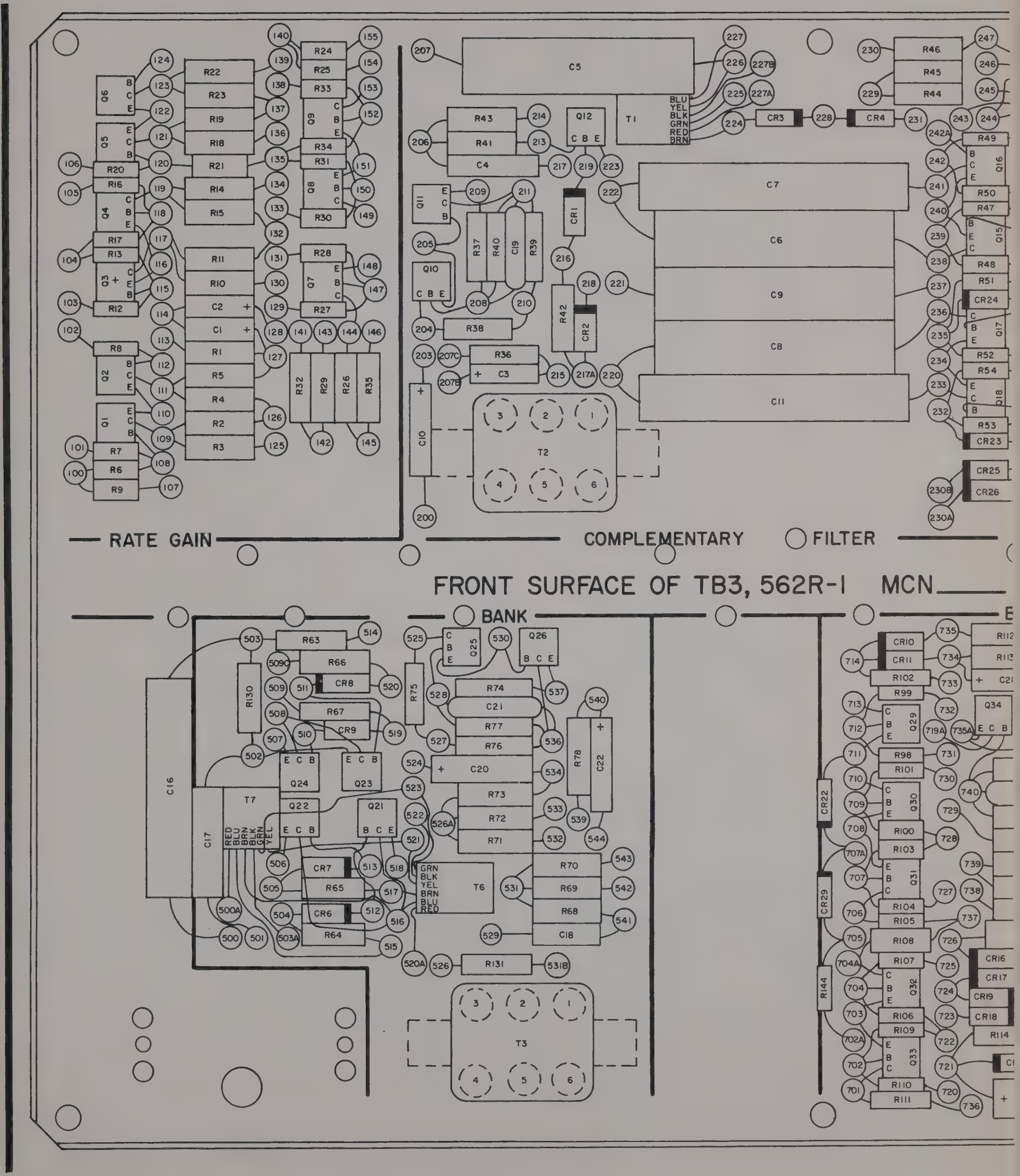
TPO-4336-018


MODE GEN
FRONT OF UNIT
ANNUNCIATOR LOGIC
ANNUNCIATOR DRIVE
FRONT SURFACE OF TB2, 562R-1
MCN
CONVERTER
CD INPUT
HDG INPUT
J3
J4
J5
J6
T3
GRN
BRN
RED
BLU
BLK
YEL
TPO-4335-018

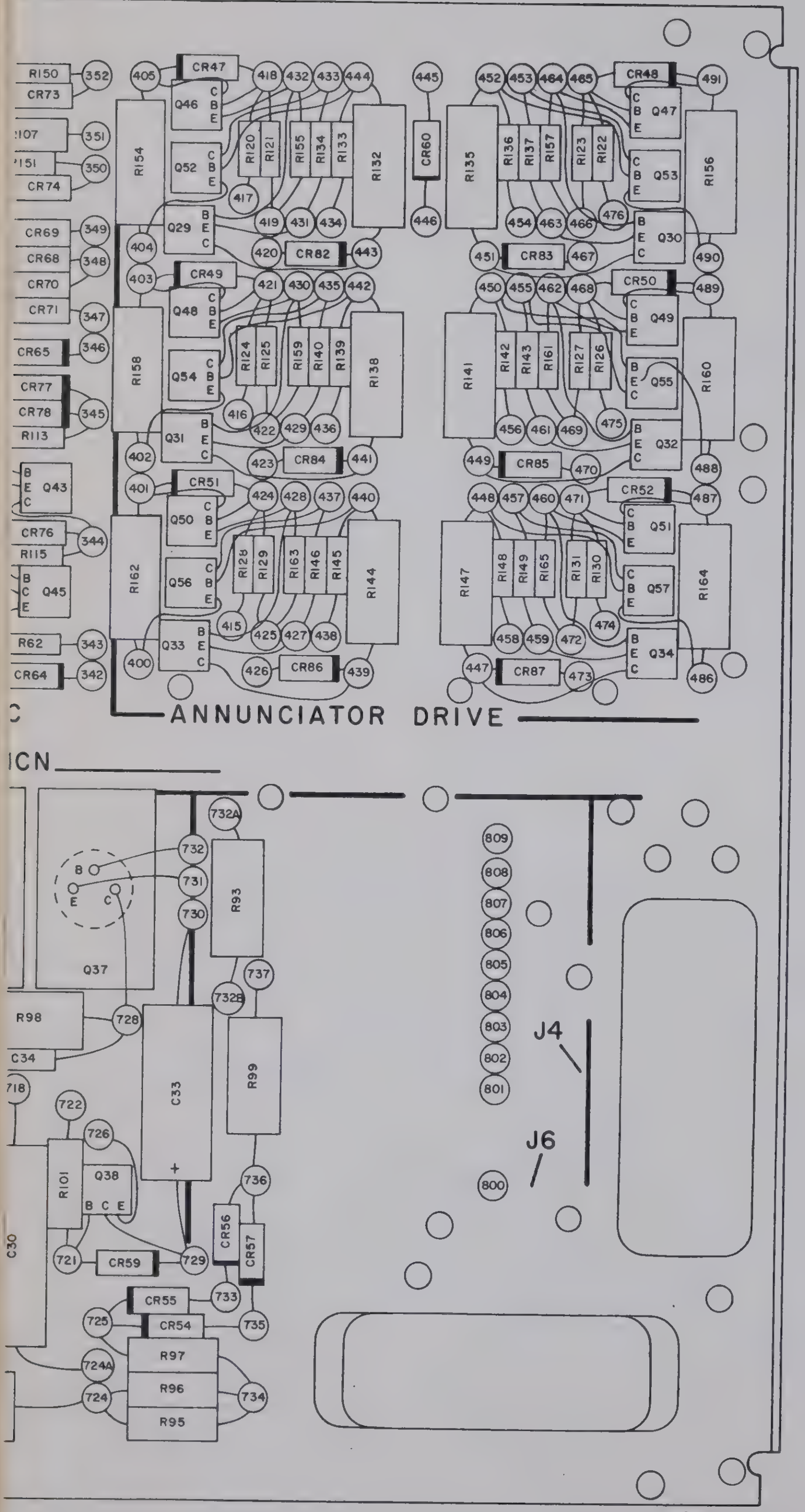
562R-1 Terminal Board 2, Parts Location
Figure 804


ANNUNCIATOR DRIVE
ICN
J4
J6
R150
CR73
CR74
CR69
CR68
CR70
CR71
CR65
CR77
CR78
R113
Q43
CR76
R115
Q45
R62
CR64
CR47
CR48
CR49
CR50
CR51
CR52
CR60
CR82
CR83
CR84
CR85
CR86
CR87
Q29
Q30
Q31
Q32
Q33
Q34
Q46
Q47
Q48
Q49
Q50
Q51
Q52
Q53
Q54
Q55
Q56
Q57
R120
R121
R122
R123
R124
R125
R126
R127
R128
R129
R130
R131
R132
R133
R134
R135
R136
R137
R138
R139
R140
R141
R142
R143
R144
R145
R146
R147
R148
R149
R154
R155
R156
R157
R158
R159
R160
R161
R162
R163
R164
R165
Q37
Q38
R93
R95
R96
R97
R98
R99
R101
C30
C33
C34
CR54
CR55
CR56
CR57
CR59
800
801
802
803
804
805
806
807
808
809
732A
732B
724A

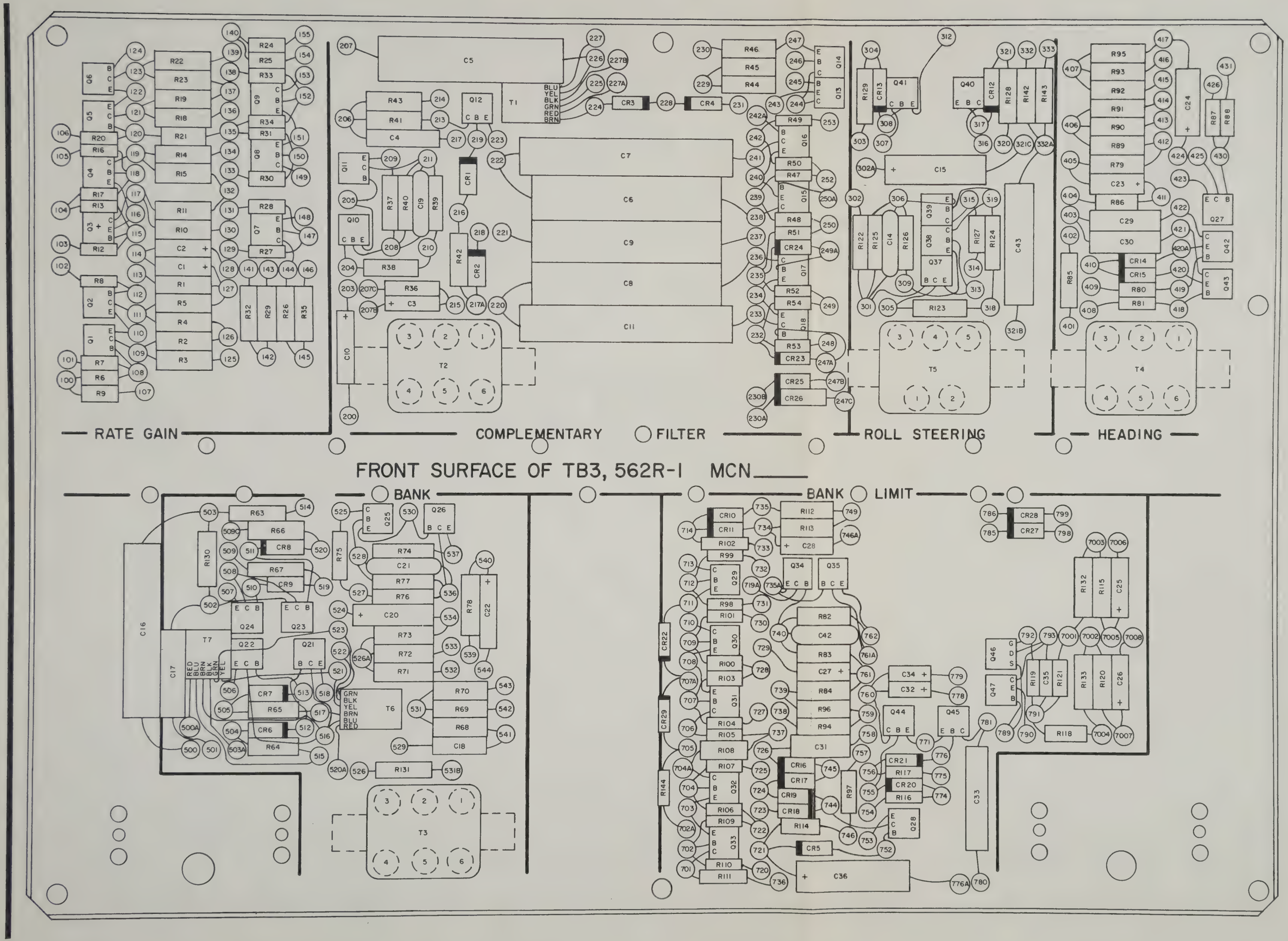
TPO-4335-018


RATE GAIN
COMPLEMENTARY FILTER
FRONT SURFACE OF TB3, 562R-1 MCN
BANK
C5
T1
C7
C6
C9
C8
C11
T2
C10
C16
C17
T7
T6
T3
C20
C21
C22
C18
R130
R75
R78
CR22
CR29
R144
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q15
Q16
Q17
Q18
Q21
Q22
Q23
Q24
Q25
Q26
Q29
Q30
Q31
Q32
Q33
Q34
BLU
YEL
BLK
GRN
RED
BRN

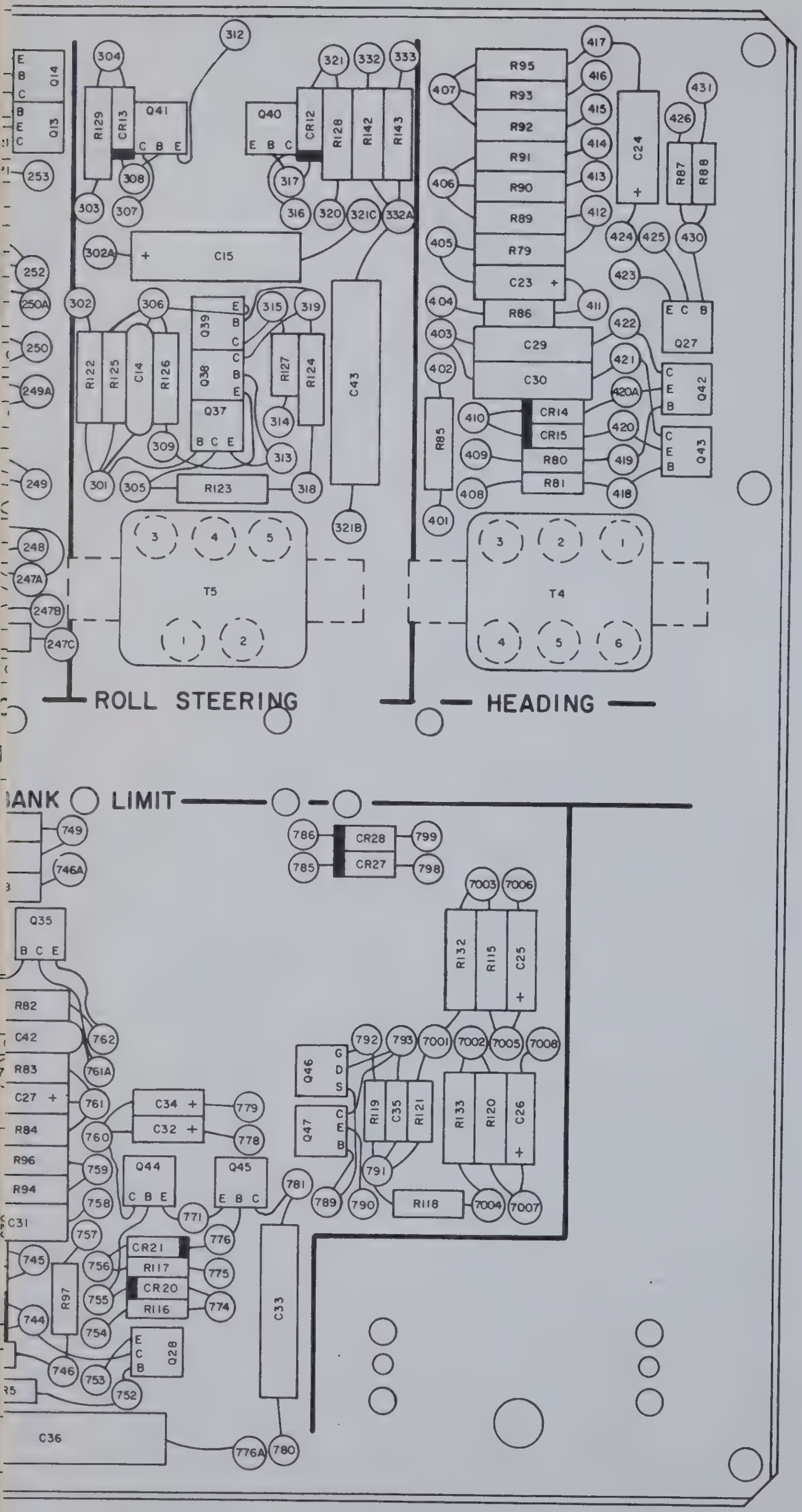
562R-1 Terminal Board 3, Parts Location
Figure 805


ANNUNCIATOR DRIVE
ICN
J4
J6
R150
CR73
R151
CR74
CR69
CR68
CR70
CR71
CR65
CR77
CR78
R113
Q43
CR76
R115
Q45
R62
CR64
R154
R158
R162
Q46
Q52
Q29
Q48
Q54
Q31
Q50
Q56
Q33
CR47
CR49
CR51
CR82
CR84
CR86
R120
R121
R155
R134
R133
R132
R124
R125
R159
R140
R139
R138
R128
R129
R163
R146
R145
R144
CR60
R135
R136
R137
R157
R123
R122
R156
Q47
Q53
Q30
CR48
CR83
CR50
R141
R142
R143
R161
R127
R126
R160
Q49
Q55
Q32
CR85
CR52
R147
R148
R149
R165
R131
R130
R164
Q51
Q57
Q34
CR87
Q37
R93
R98
C34
C33
R99
R101
Q38
CR59
CR56
CR57
CR55
CR54
R97
R96
R95
C30
800
801
802
803
804
805
806
807
808
809

TPO-4335-018


FRONT SURFACE OF TB3, 562R-1 MCN____
RATE GAIN
COMPLEMENTARY
FILTER
ROLL STEERING
HEADING
BANK
BANK
LIMIT
C5
T1
C7
C6
C9
C8
C11
T2
T5
T4
C15
C43
T7
T6
T3
C16
C17
C36
C33
C31

562R-1 Terminal Board 3, Parts Location
Figure 805



ROLL STEERING
HEADING
ANK
LIMIT
Q14
Q13
E
B
C
253
252
250A
250
249A
249
248
247A
247B
247C
312
304
R129
CR13
Q41
C B E
308
303
307
Q40
E B C
CR12
R128
R142
R143
321
332
333
317
316
320
321C
332A
302A
C15
302
306
Q39
Q38
Q37
B C E
315
319
R122
R125
C14
R126
R127
R124
C43
314
313
309
301
305
R123
318
321B
T5
1
2
3
4
5
R95
R93
R92
R91
R90
R89
R79
C23
R86
C29
C30
CR14
CR15
R80
R81
R85
407
406
405
404
403
402
410
409
408
401
417
416
415
414
413
412
411
422
421
420A
420
419
418
C24
R87
R88
426
431
424
425
430
423
E C B
Q27
Q42
Q43
T4
6
749
746A
786
785
CR28
CR27
799
798
7003
7006
R132
R115
C25
Q35
B C E
R82
C42
R83
C27
R84
R96
R94
C31
762
761A
761
760
759
758
757
745
744
746
C34
C32
779
778
Q44
C B E
Q45
E B C
771
776
775
774
CR21
R117
CR20
R116
756
755
754
753
752
R97
Q28
Q46
G
D
S
Q47
792
793
7001
7002
7005
7008
R119
C35
R121
R133
R120
C26
791
789
790
781
R118
7004
7007
C33
C36
776A
780
R5

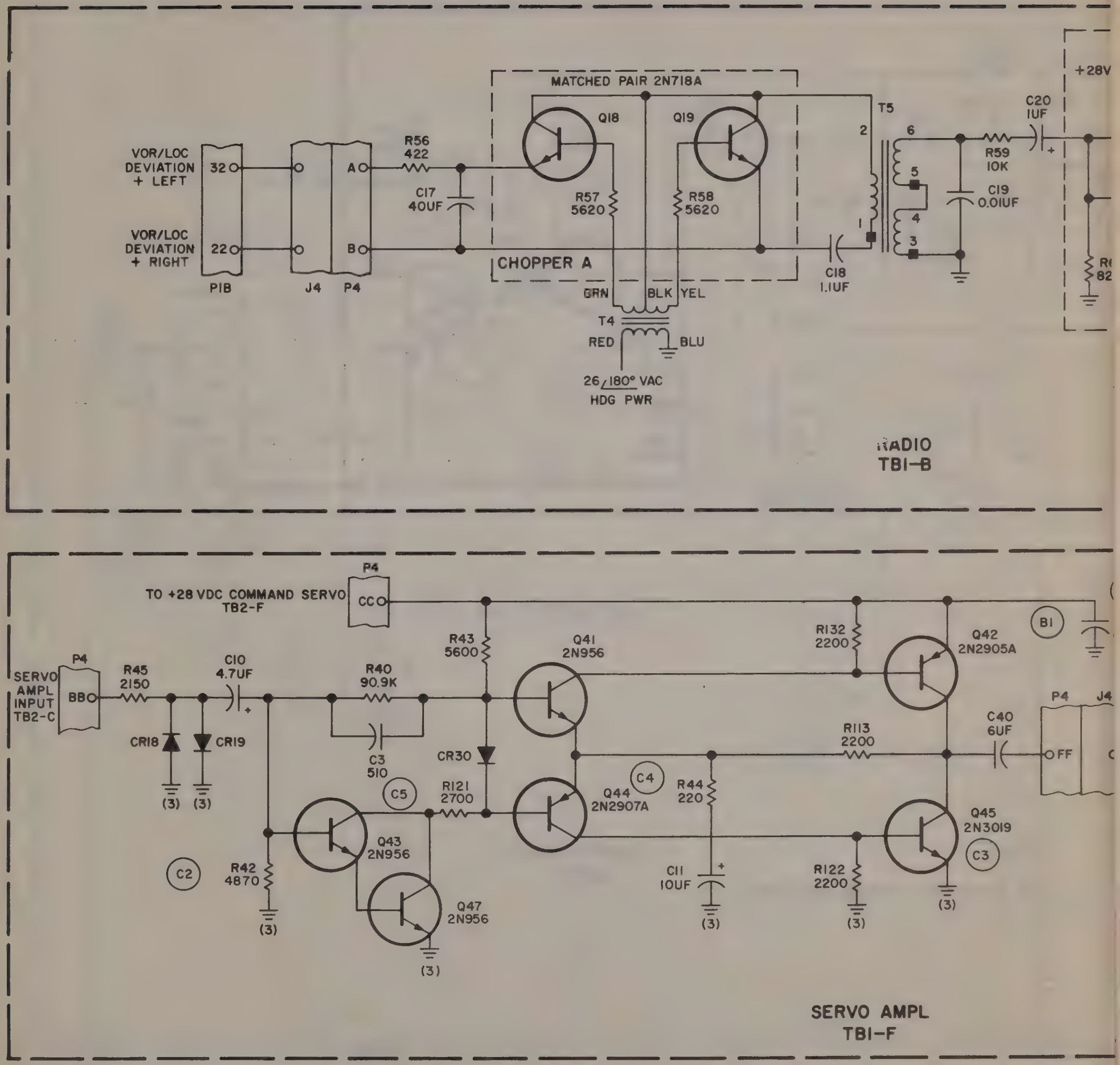
SCHEMATIC REVISIONS

PAGE	REVISION IDENTIFICATION	DESCRIPTION OF REVISION AND REASON FOR CHANGE	SERVICE BULLETIN	EFFECTIVITY
823	A1	Added 1 uf capacitor to prevent false switching of the approach arm on switch.	1	All.
823	A2	Added 0.01 uf capacitor.	8	All.
825	A3	Added zener diodes.	6	All.
823	B2	Addition of Q46 and circuitry in order to increase sensitivity of the sensor threshold circuitry.	9	Installed in units at Collins bearing SN142, 211, 213-15, 218-224, 226, 228, 229, 232, 243-247, 249, 250, 252, 255, 257, 259, 263, 264, 266, 274, 278, 281, 282, 287-91, 297, 301, 302, 305, 307, 309, 410, and above. Applicable to all units.
821	B1	Changed Q42 from 2N1132 to 2N2905A in order to provide increased reliability of servo amplifier.	10	Same as FSB no. 9.
823	B3, B4, B5	Removed diode CR37, and changed values of resistors R13(27K) to 68K and R9(100K) to 27K in order to improve monitoring of heading power in the heading mode.	11	Installed in units at Collins bearing SN245, 318, 312, 277, 287, 285, 253, 313, 291, 256, 277, 230, 262, 288, 292, 310, 286, 255, 261, 259, 260, 293, 265, 283, 279, 276, 306, 300, 294, 264, 302, 299, 282, 273, 225,

562R-1 Roll Steering Computer, Schematic Diagram TB1 (Sheet 1A of 6)
Figure 806

PAGE	REVISION IDENTIFICATION	DESCRIPTION OF REVISION AND REASON FOR CHANGE	SERVICE BULLETIN	EFFECTIVITY
				257, 268, 309, 328, 330, 296, 298, 332, 329, 331, 308, 295, 284, 326, 324, 323, 315, 343, and above. Applicable to all units.
821	C1, C2, C3 C4, C5	Added capacitor C41 (0.01 uf), changed value of resistor R42 from 8250 to 4870 ohms, changed transistor type on Q45 from 2N1711 to 2N3019 and Q44 from 2N2907 to 2N2907A, added resistor R121 (2700 ohms). The purpose of the modification is to improve the stability of the servo amplifier and reduce amplifier susceptibility to voltage transients.	16	Installed in all units at Collins bearing SN 688 and above. Applicable to all units.
825	C6	Change routing of complementary filter output from P6-R and P3-T to P5-MM and P3-MM. This modification is to improve system performance when operating from multiple ac sources.	15	Installed in all units at Collins bearing SN482 and above. Applicable to all units.
827	C7	Changed values of resistors, R129 from 82.5K to 147K ohms, R128 from 82.5K to 100K ohms and R55 from 133K to 75K ohms. This modification is to optimize course datum gain during VOR track conditions and to reduce crosswind standoff.	14	Installed in all units at Collins bearing SN332 and above. Applicable to all units.
829	C8	Changed -28 volts dc on schematic to +28 volts dc.	13	Applicable to all units.

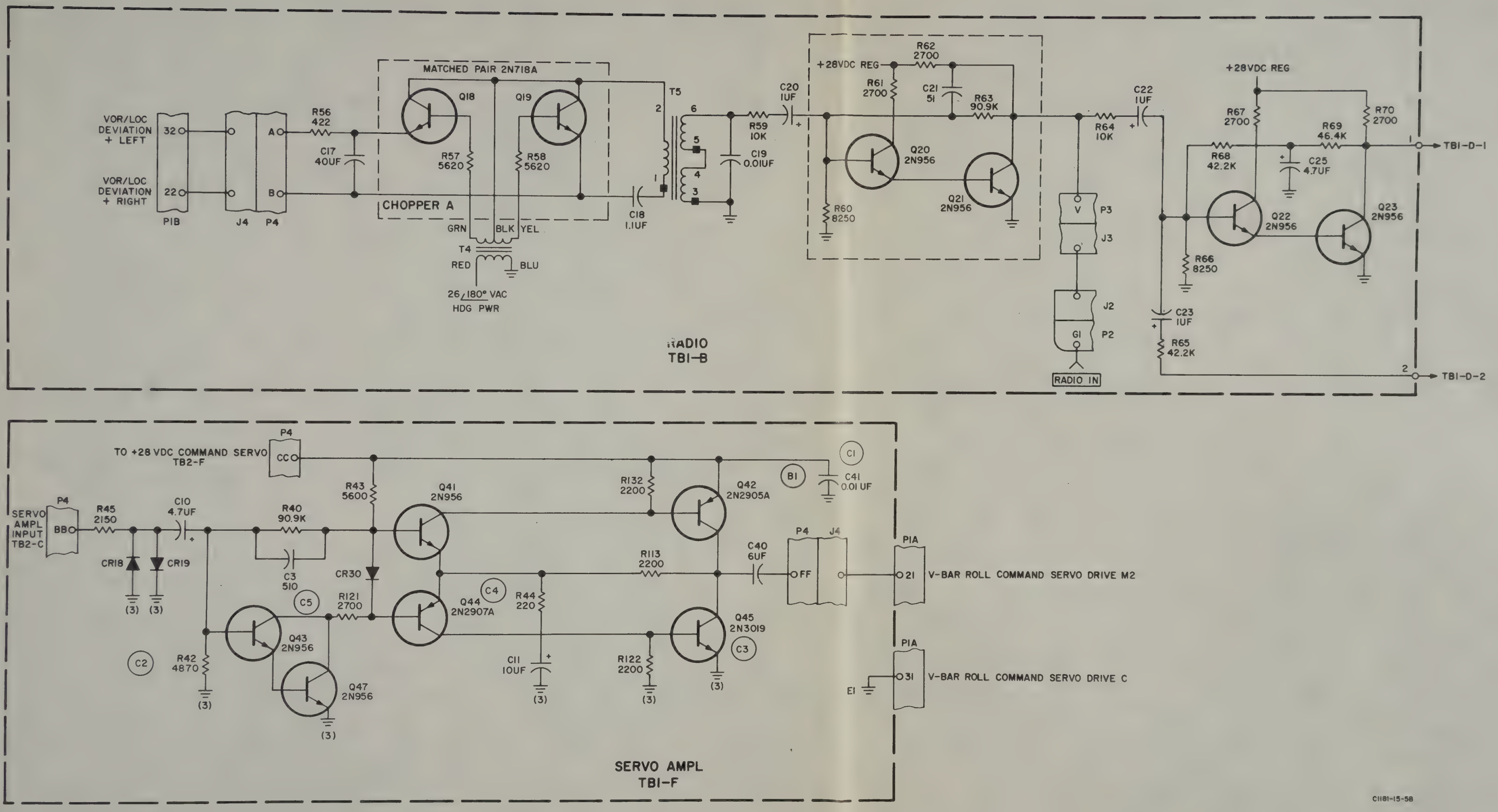
526R-1 Steering Computer, Schematic Diagram TB1 (Sheet 1B of 6)
Figure 806


MATCHED PAIR 2N718A
Q18
Q19
T5
+28V
C20
1UF
VOR/LOC
DEVIATION
+ LEFT
32
VOR/LOC
DEVIATION
+ RIGHT
22
P1B
J4
P4
A
B
R56
422
C17
40UF
R57
5620
R58
5620
CHOPPER A
GRN
BLK
YEL
T4
RED
BLU
26 /180° VAC
HDG PWR
2
6
5
4
3
1
C18
1.1UF
R59
10K
C19
0.01UF
RADIO
TB1-B
TO +28 VDC COMMAND SERVO
TB2-F
P4
CC
R43
5600
Q41
2N956
R132
2200
Q42
2N2905A
B1
SERVO
AMPL
INPUT
TB2-C
P4
BB
R45
2150
C10
4.7UF
R40
90.9K
C3
510
CR18
CR19
CR30
R113
2200
C40
6UF
P4
J4
FF
C4
C5
R121
2700
Q44
2N2907A
R44
220
Q45
2N3019
C3
Q43
2N956
C2
R42
4870
C11
10UF
R122
2200
Q47
2N956
(3)
SERVO AMPL
TB1-F

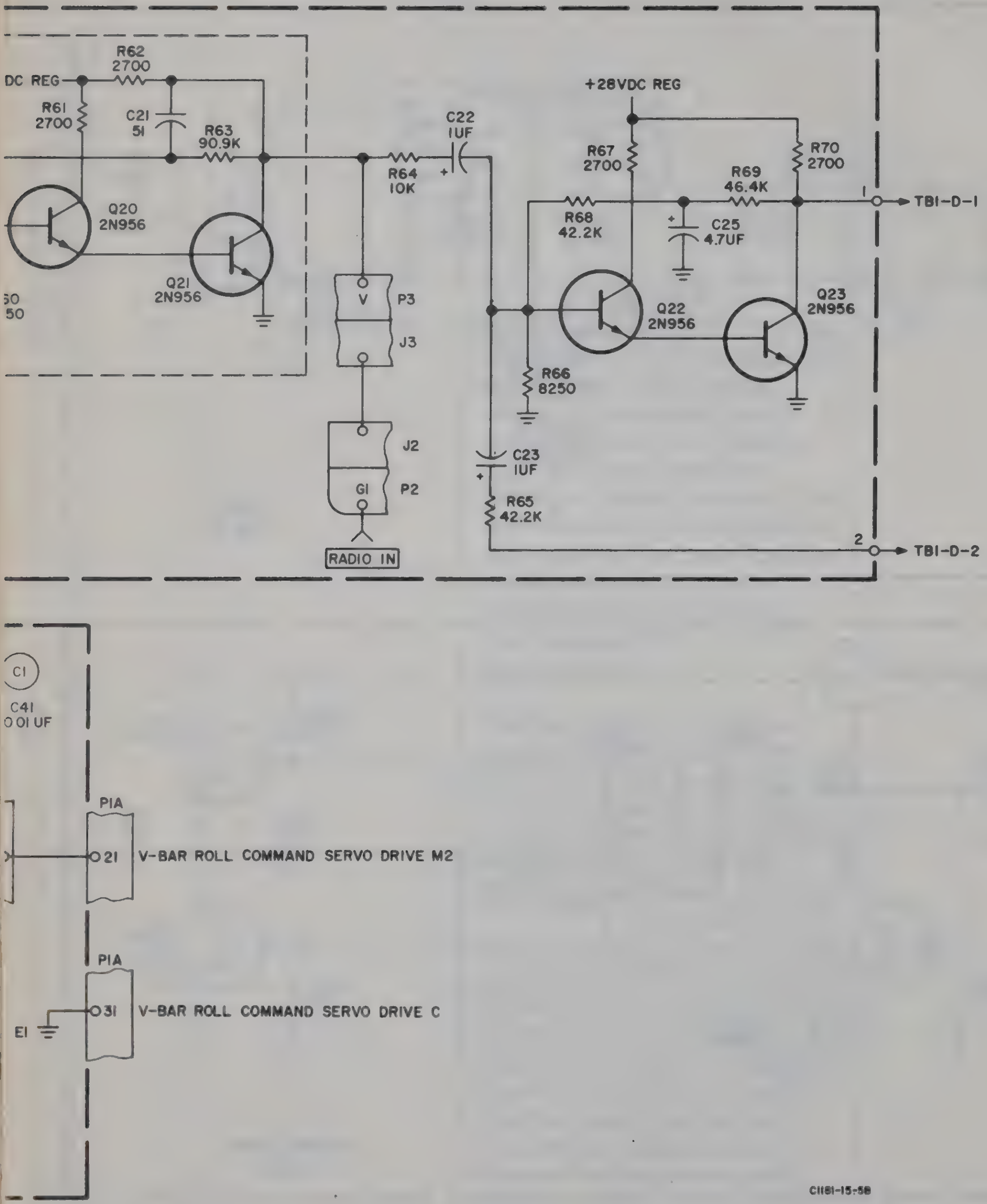
562R-1 Roll Steering Computer, Schematic Diagram TB1 (Sheet 2 of 6)
Figure 806

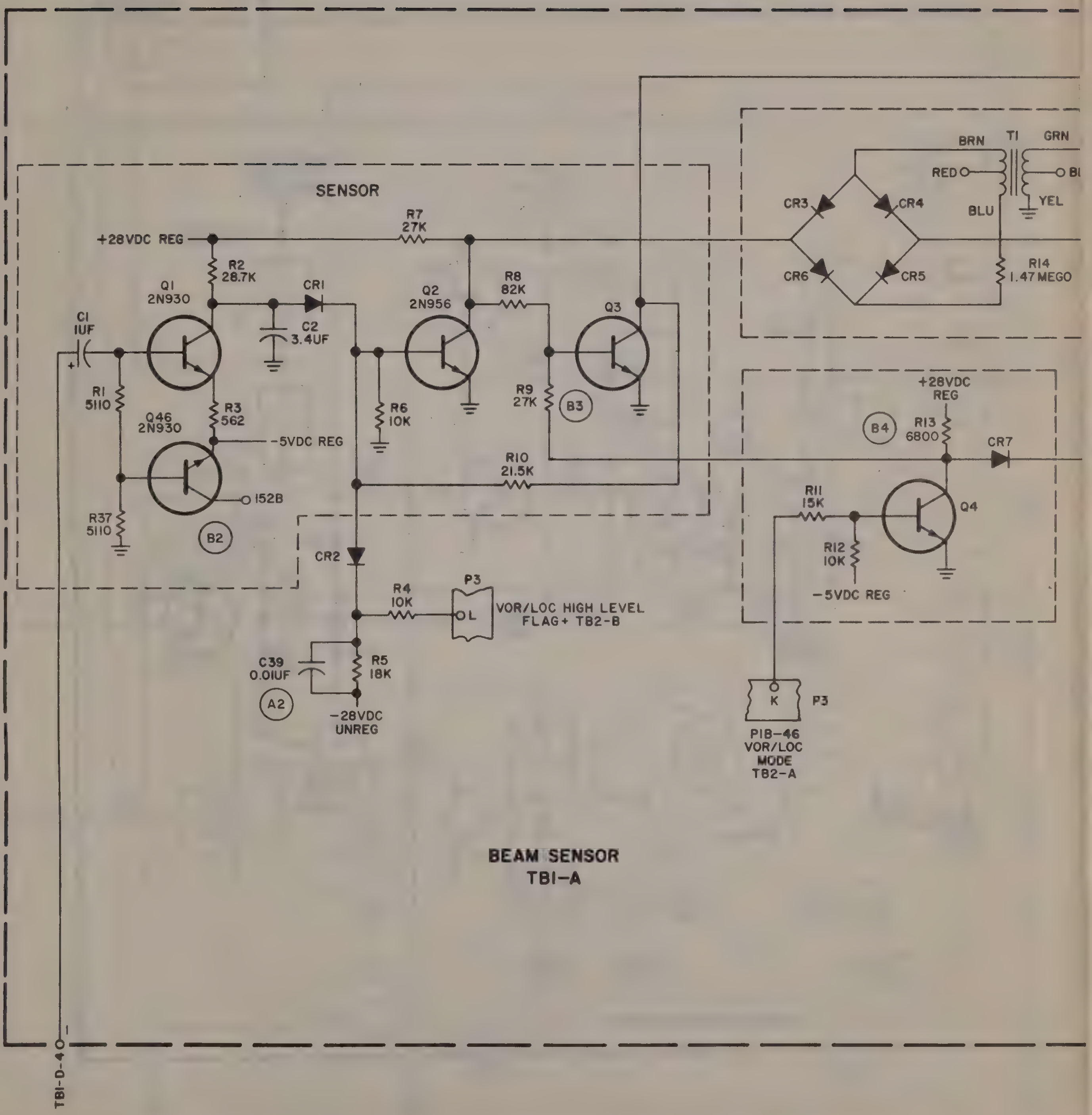
PAGE	REVISION IDENTIFICATION	DESCRIPTION OF REVISION AND REASON FOR CHANGE	SERVICE BULLETIN	EFFECTIVITY
				257, 268, 309, 328, 330, 296, 298, 332, 329, 331, 308, 295, 284, 326, 324, 323, 315, 343, and above. Applicable to all units.
821	C1, C2, C3 C4, C5	Added capacitor C41 (0.01 uf), changed value of resistor R42 from 8250 to 4870 ohms, changed transistor type on Q45 from 2N1711 to 2N3019 and Q44 from 2N2907 to 2N2907A, added resistor R121 (2700 ohms). The purpose of the modification is to improve the stability of the servo amplifier and reduce amplifier susceptibility to voltage transients.	16	Installed in all units at Collins bearing SN 688 and above. Applicable to all units.
825	C6	Change routing of complementary filter output from P6-R and P3-T to P5-MM and P3-MM. This modification is to improve system performance when operating from multiple ac sources.	15	Installed in all units at Collins bearing SN482 and above. Applicable to all units.
827	C7	Changed values of resistors, R129 from 82.5K to 147K ohms, R128 from 82.5K to 100K ohms and R55 from 133K to 75K ohms. This modification is to optimize course datum gain during VOR track conditions and to reduce crosswind standoff.	14	Installed in all units at Collins bearing SN332 and above. Applicable to all units.
829	C8	Changed -28 volts dc on schematic to +28 volts dc.	13	Applicable to all units.

526R-1 Steering Computer, Schematic Diagram TB1 (Sheet 1B of 6)
Figure 806

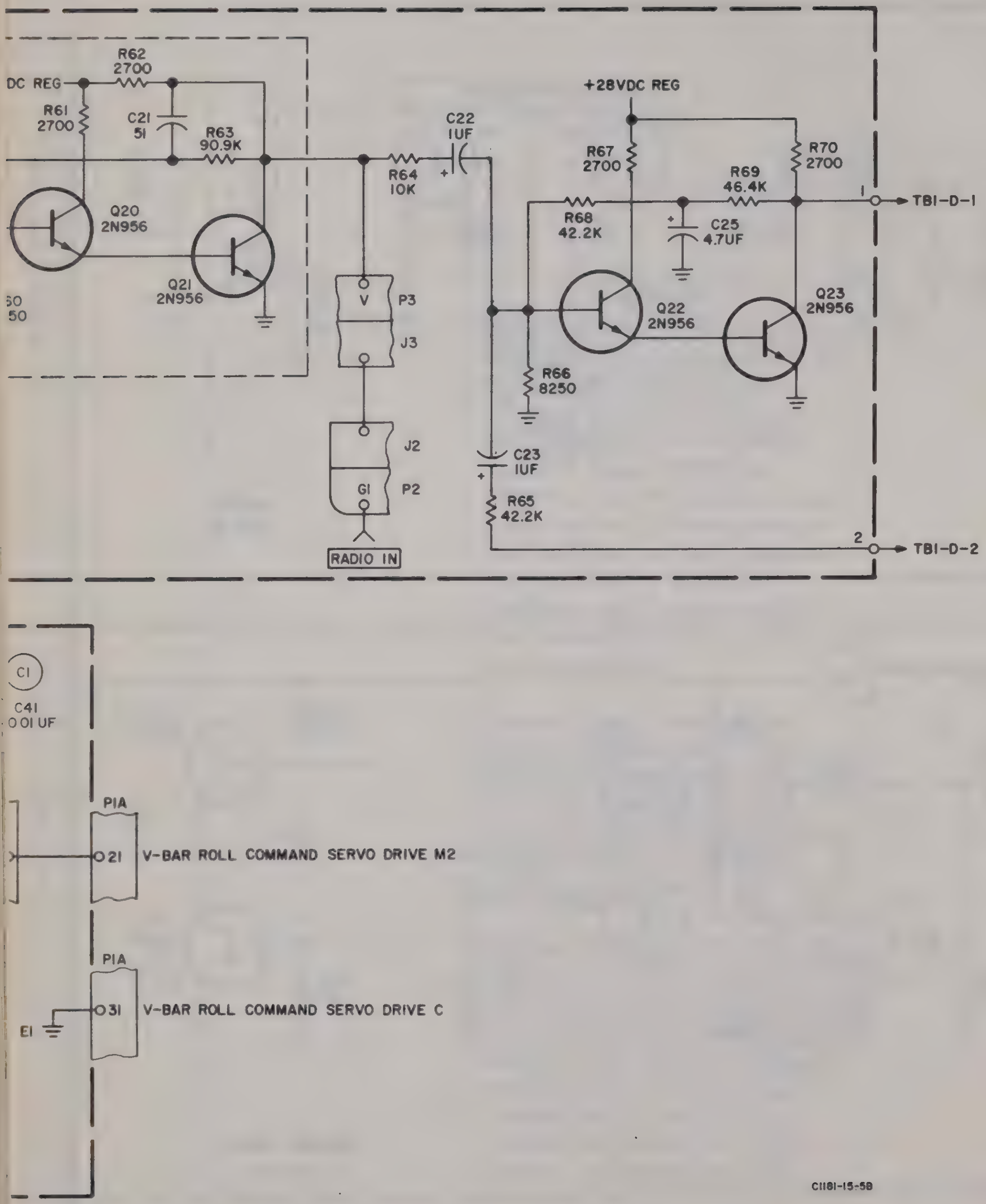

MATCHED PAIR 2N718A
VOR/LOC DEVIATION + LEFT
VOR/LOC DEVIATION + RIGHT
32
22
P1B
J4
P4
A
B
R56 422
C17 40UF
Q18
Q19
R57 5620
R58 5620
CHOPPER A
GRN
BLK
YEL
T4
RED
BLU
26∠180° VAC HDG PWR
T5
2
6
1
5
4
3
C18 1.1UF
R59 10K
C19 0.01UF
C20 1UF
+28VDC REG
R62 2700
R61 2700
C21 51
R63 90.9K
Q20 2N956
Q21 2N956
R60 8250
R64 10K
C22 1UF
V
P3
J3
J2
G1
P2
RADIO IN
+28VDC REG
R67 2700
R70 2700
R69 46.4K
R68 42.2K
C25 4.7UF
Q22 2N956
Q23 2N956
R66 8250
C23 1UF
R65 42.2K
1
2
TB1-D-1
TB1-D-2
RADIO TB1-B
TO +28 VDC COMMAND SERVO TB2-F
P4
CC
C1
B1
C41 0.01 UF
R132 2200
Q42 2N2905A
R43 5600
Q41 2N956
SERVO AMPL INPUT TB2-C
P4
BB
R45 2150
C10 4.7UF
R40 90.9K
CR18
CR19
(3)
(3)
C3 510
CR30
R113 2200
C40 6UF
P4
J4
FF
P1A
21
V-BAR ROLL COMMAND SERVO DRIVE M2
C5
R121 2700
Q44 2N2907A
C4
R44 220
Q45 2N3019
C3
Q43 2N956
C2
R42 4870
(3)
Q47 2N956
(3)
C11 10UF
(3)
R122 2200
(3)
(3)
P1A
31
V-BAR ROLL COMMAND SERVO DRIVE C
E1
SERVO AMPL TB1-F
C1181-15-58

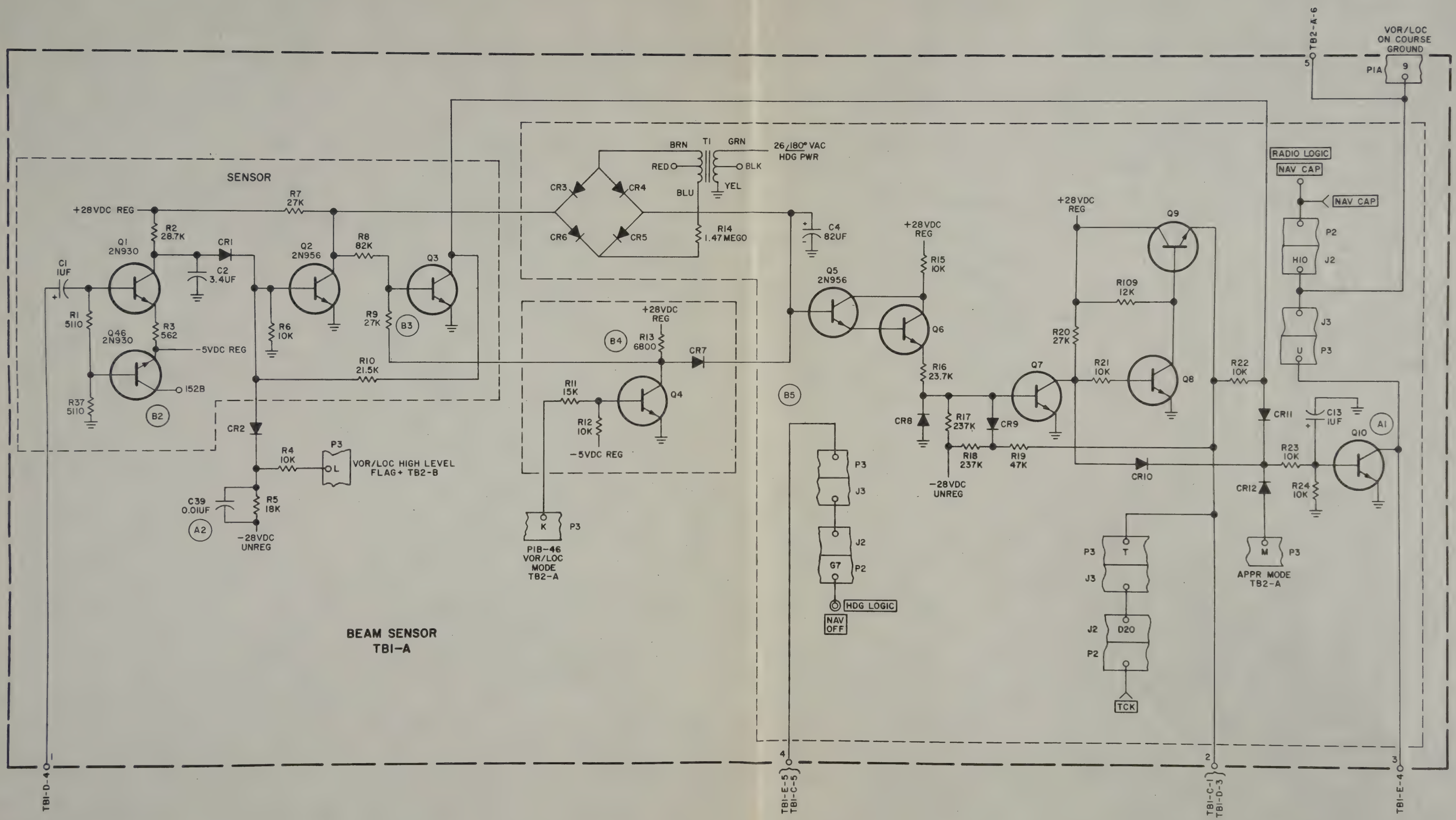
562R-1 Roll Steering Computer, Schematic Diagram TB1 (Sheet 2 of 6)
Figure 806


DC REG
R62
2700
R61
2700
C21
51
R63
90.9K
Q20
2N956
Q21
2N956
50
50
R64
10K
C22
1UF
+
V
P3
J3
J2
G1
P2
RADIO IN
+28VDC REG
R67
2700
R70
2700
R69
46.4K
R68
42.2K
C25
4.7UF
+
1
TB1-D-1
Q22
2N956
Q23
2N956
R66
8250
C23
1UF
+
R65
42.2K
2
TB1-D-2
C1
C41
0.01 UF
P1A
21
V-BAR ROLL COMMAND SERVO DRIVE M2
P1A
31
V-BAR ROLL COMMAND SERVO DRIVE C
E1
C1181-15-58

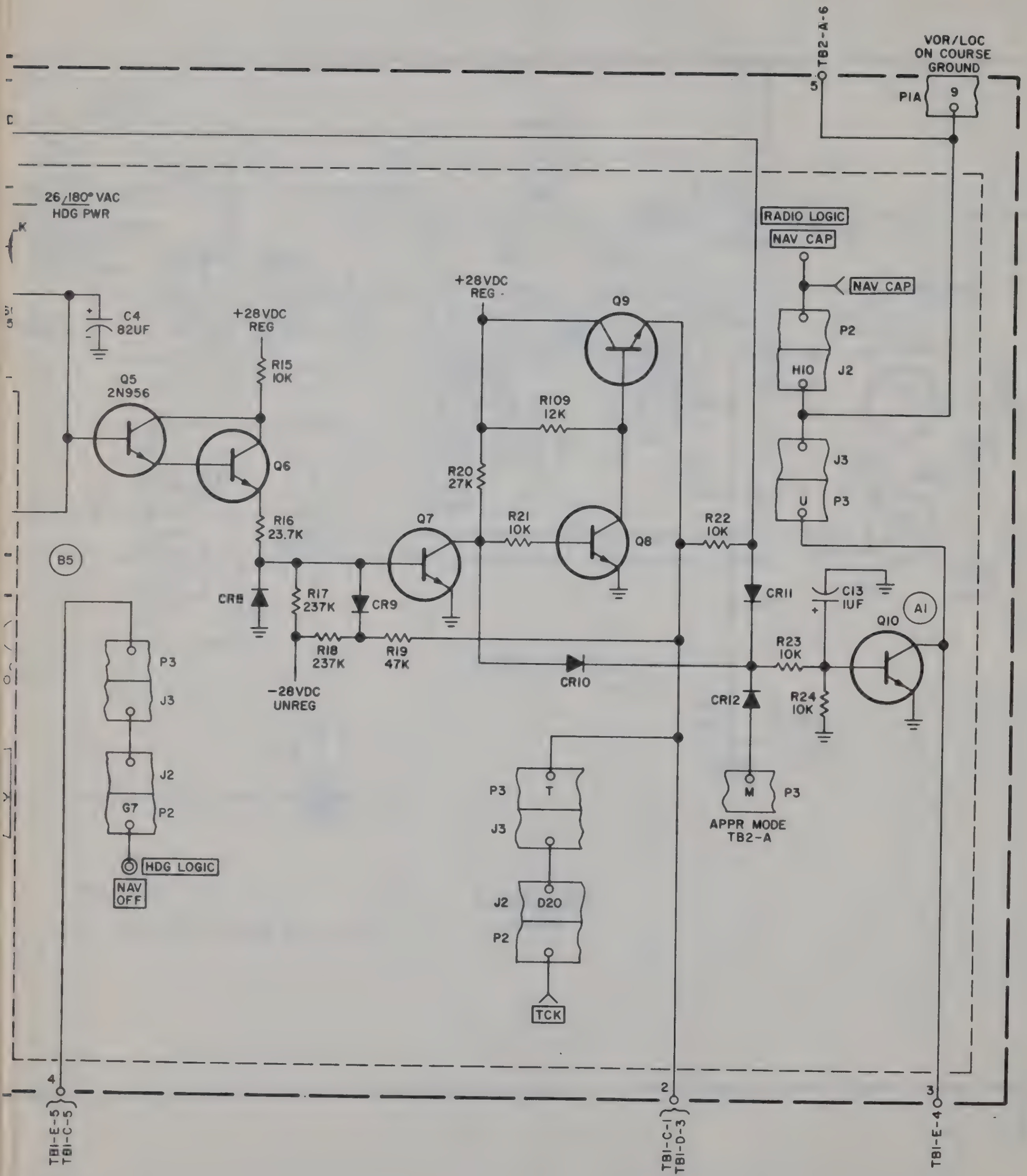

SENSOR
+28VDC REG
R7
27K
R2
28.7K
CR1
Q1
2N930
C1
1UF
C2
3.4UF
Q2
2N956
R8
82K
Q3
R1
5110
R3
562
R6
10K
R9
27K
B3
Q46
2N930
-5VDC REG
R10
21.5K
R37
5110
152B
B2
CR2
R4
10K
P3
L
VOR/LOC HIGH LEVEL
FLAG+ TB2-B
C39
0.01UF
R5
18K
A2
-28VDC
UNREG
BRN
T1
GRN
RED
BL
BLU
YEL
CR3
CR4
CR6
CR5
R14
1.47 MEGO
+28VDC
REG
B4
R13
6800
CR7
R11
15K
Q4
R12
10K
-5VDC REG
K
P3
P1B-46
VOR/LOC
MODE
TB2-A
BEAM SENSOR
TB1-A
1
TB1-D-4

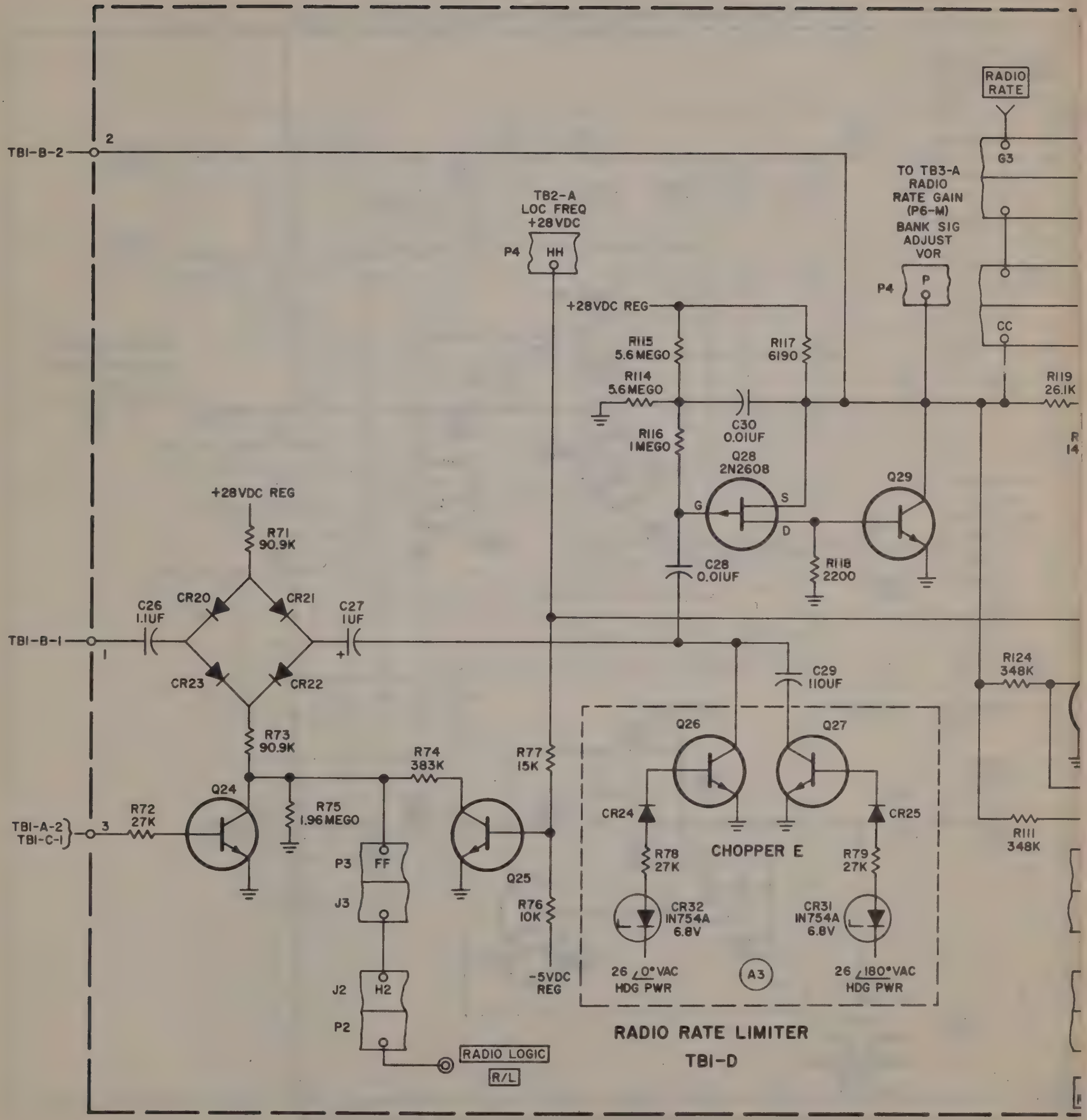
562R-1 Roll Steering Computer, Schematic Diagram TB1 (Sheet 3 of 6)
Figure 806


DC REG
R62
2700
R61
2700
C21
51
R63
90.9K
Q20
2N956
Q21
2N956
50
50
R64
10K
C22
1UF
+
V
P3
J3
J2
G1
P2
RADIO IN
+28VDC REG
R67
2700
R70
2700
R69
46.4K
R68
42.2K
C25
4.7UF
+
Q22
2N956
Q23
2N956
R66
8250
C23
1UF
+
R65
42.2K
1
TB1-D-1
2
TB1-D-2
C1
C41
.001 UF
P1A
21
V-BAR ROLL COMMAND SERVO DRIVE M2
P1A
31
V-BAR ROLL COMMAND SERVO DRIVE C
E1
C1181-15-58

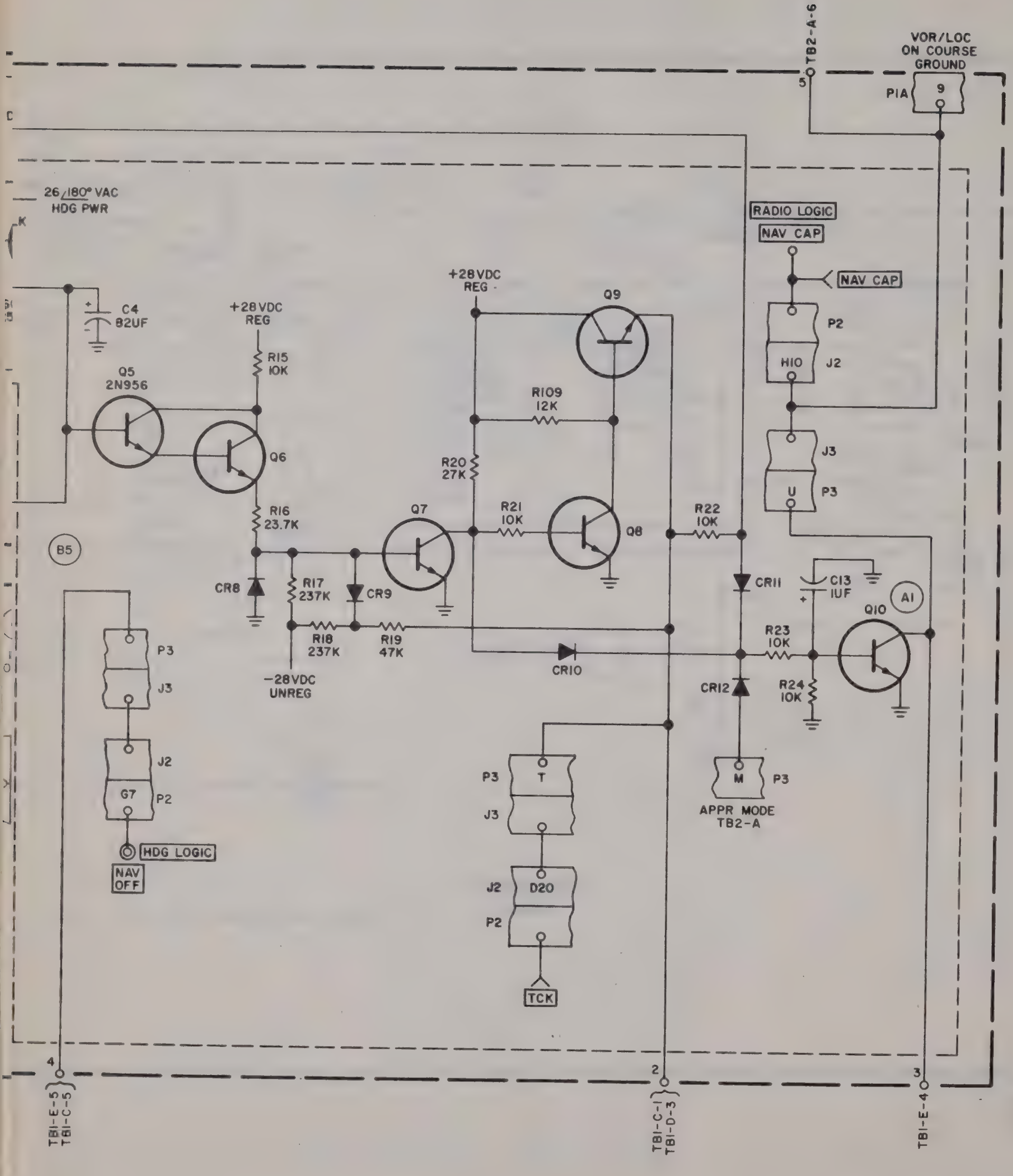

TB2-A-6
5
VOR/LOC
ON COURSE
GROUND
P1A
9
SENSOR
+28VDC REG
R7
27K
R2
28.7K
Q1
2N930
CR1
C2
3.4UF
Q2
2N956
R8
82K
Q3
C1
1UF
R1
5110
Q46
2N930
R3
562
-5VDC REG
152B
R6
10K
R9
27K
B3
R10
21.5K
R37
5110
B2
CR2
R4
10K
P3
L
VOR/LOC HIGH LEVEL
FLAG+ TB2-8
C39
0.01UF
R5
18K
A2
-28VDC
UNREG
BRN
T1
GRN
26/180° VAC
HDG PWR
RED
BLK
BLU
YEL
CR3
CR4
CR6
CR5
R14
1.47 MEGO
C4
82UF
+28VDC
REG
B4
R13
6800
CR7
R11
15K
Q4
R12
10K
-5VDC REG
K
P3
P1B-46
VOR/LOC
MODE
TB2-A
BEAM SENSOR
TB1-A
Q5
2N956
R15
10K
Q6
R16
23.7K
B5
CR8
R17
237K
CR9
R18
237K
R19
47K
-28VDC
UNREG
P3
J3
J2
G7
P2
HDG LOGIC
NAV
OFF
+28VDC
REG
Q9
R109
12K
R20
27K
R21
10K
Q7
Q8
CR10
P3
T
J3
J2
D20
P2
TCK
RADIO LOGIC
NAV CAP
NAV CAP
P2
H10
J2
J3
U
P3
R22
10K
CR11
C13
1UF
A1
Q10
R23
10K
CR12
R24
10K
M
P3
APPR MODE
TB2-A
1
TB1-D-4
4
TB1-E-5
TB1-C-5
2
TB1-C-1
TB1-D-3
3
TB1-E-4

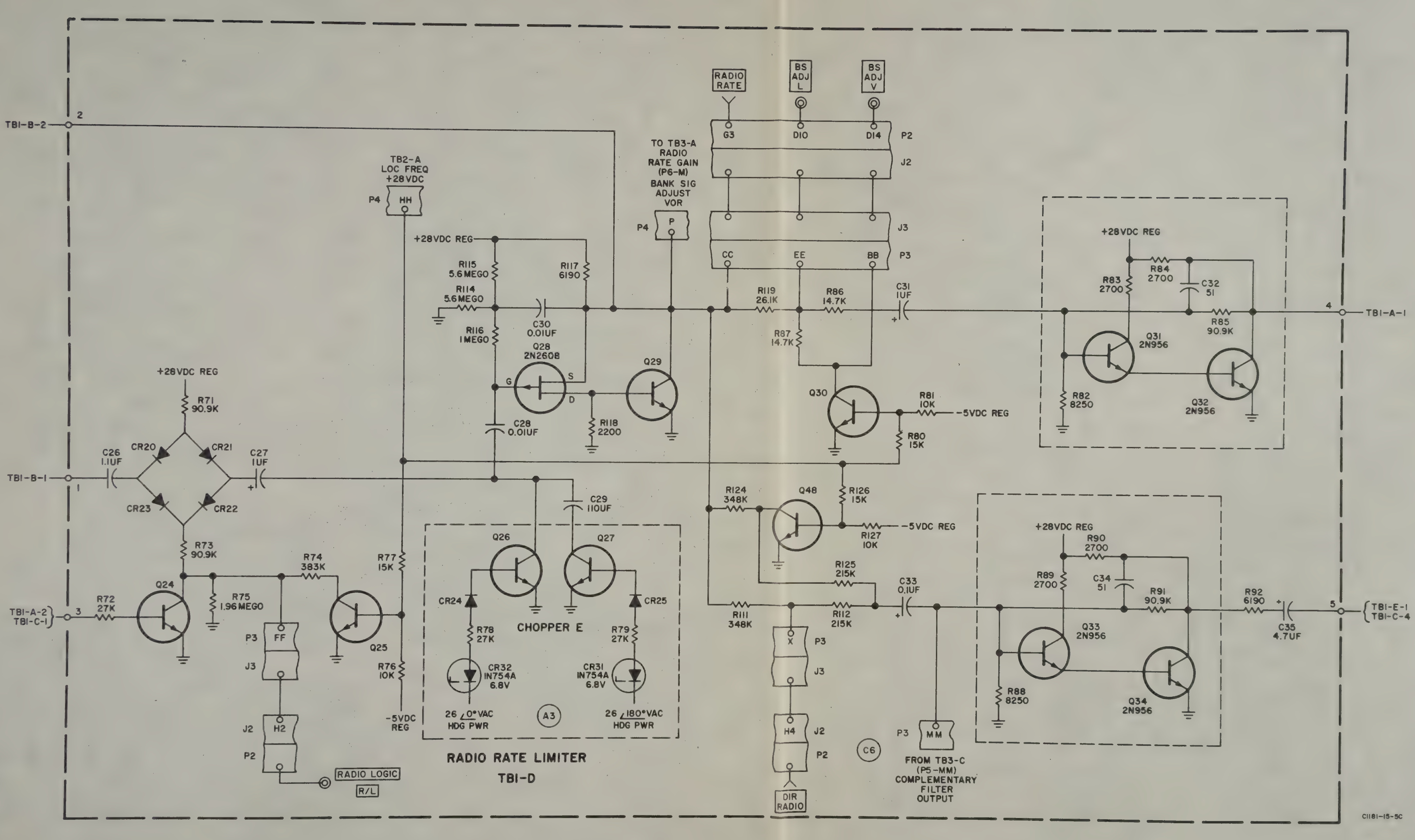
562R-1 Roll Steering Computer, Schematic Diagram TB1 (Sheet 3 of 6)
Figure 806


TB2-A-6
5
VOR/LOC
ON COURSE
GROUND
P1A
9
C
26 /180° VAC
HDG PWR
K
RADIO LOGIC
NAV CAP
NAV CAP
P2
H10
J2
J3
U
P3
+28VDC
REG
Q9
C4
82UF
+28VDC
REG
R15
10K
Q5
2N956
R109
12K
Q6
R20
27K
R16
23.7K
Q7
R21
10K
Q8
R22
10K
B5
CR8
R17
237K
CR9
CR11
C13
1UF
A1
Q10
R18
237K
R19
47K
CR10
R23
10K
-28VDC
UNREG
CR12
R24
10K
P3
J3
J2
G7
P2
HDG LOGIC
NAV
OFF
P3
T
J3
J2
D20
P2
TCK
M
P3
APPR MODE
TB2-A
4
TB1-E-5
TB1-C-5
2
TB1-C-1
TB1-D-3
3
TB1-E-4

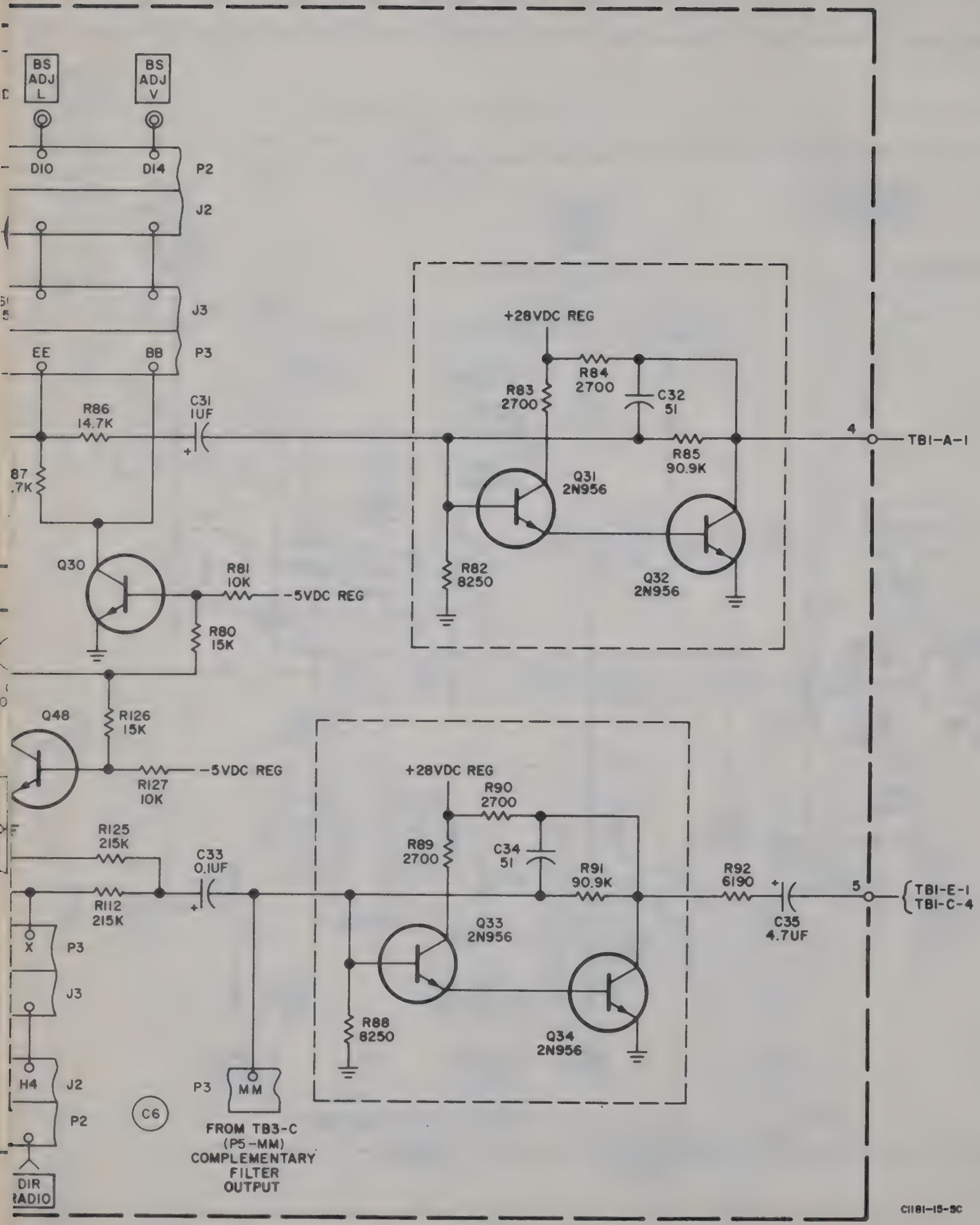

TBI-B-2
2
RADIO RATE
G3
CC
TO TB3-A RADIO RATE GAIN (P6-M) BANK SIG ADJUST VOR
P4
P
TB2-A LOC FREQ +28VDC
P4
HH
+28VDC REG
R115 5.6MEGO
R117 6190
R114 5.6MEGO
C30 0.01UF
R119 26.1K
R116 1MEGO
Q28 2N2608
G
S
D
Q29
C28 0.01UF
R118 2200
+28VDC REG
R71 90.9K
CR20
CR21
C26 1.1UF
C27 1UF
TBI-B-1
1
+
CR23
CR22
C29 110UF
R124 348K
R73 90.9K
R74 383K
R77 15K
Q26
Q27
Q24
R72 27K
TBI-A-2
TBI-C-1
3
R75 1.96MEGO
CR24
CR25
R111 348K
P3
FF
Q25
R78 27K
CHOPPER E
R79 27K
J3
R76 10K
CR32 IN754A 6.8V
CR31 IN754A 6.8V
J2
H2
-5VDC REG
26 ∠0° VAC HDG PWR
A3
26 ∠180° VAC HDG PWR
P2
RADIO RATE LIMITER
TBI-D
RADIO LOGIC
R/L

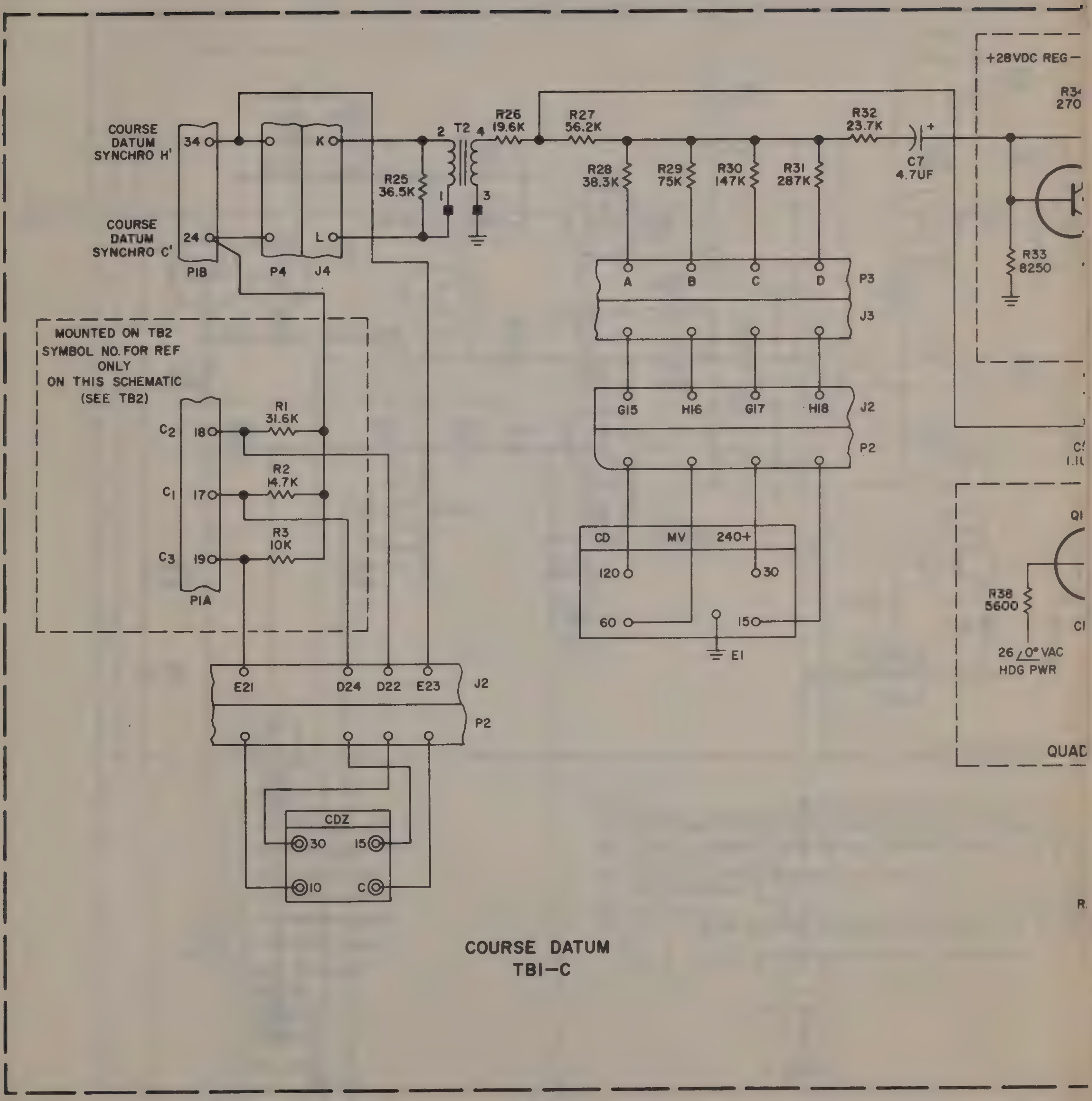
562R-1 Roll Steering Computer, Schematic Diagram TB1 (Sheet 4 of 6)
Figure 806


TB2-A-6
5
VOR/LOC
ON COURSE
GROUND
PIA
9
26/180° VAC
HDG PWR
RADIO LOGIC
NAV CAP
NAV CAP
+28VDC
REG
+28VDC
REG
C4
82UF
Q9
P2
H10
J2
R15
10K
Q5
2N956
R109
12K
J3
Q6
R20
27K
U
P3
R16
23.7K
Q7
R21
10K
Q8
R22
10K
B5
CR8
R17
237K
CR9
CR11
C13
1UF
A1
Q10
R18
237K
R19
47K
R23
10K
CR10
-28VDC
UNREG
CR12
R24
10K
P3
J3
P3
T
J3
M
P3
APPR MODE
TB2-A
J2
G7
P2
HDG LOGIC
NAV
OFF
J2
D20
P2
TCK
4
2
3
TBI-E-5
TBI-C-5
TBI-C-1
TBI-D-3
TBI-E-4

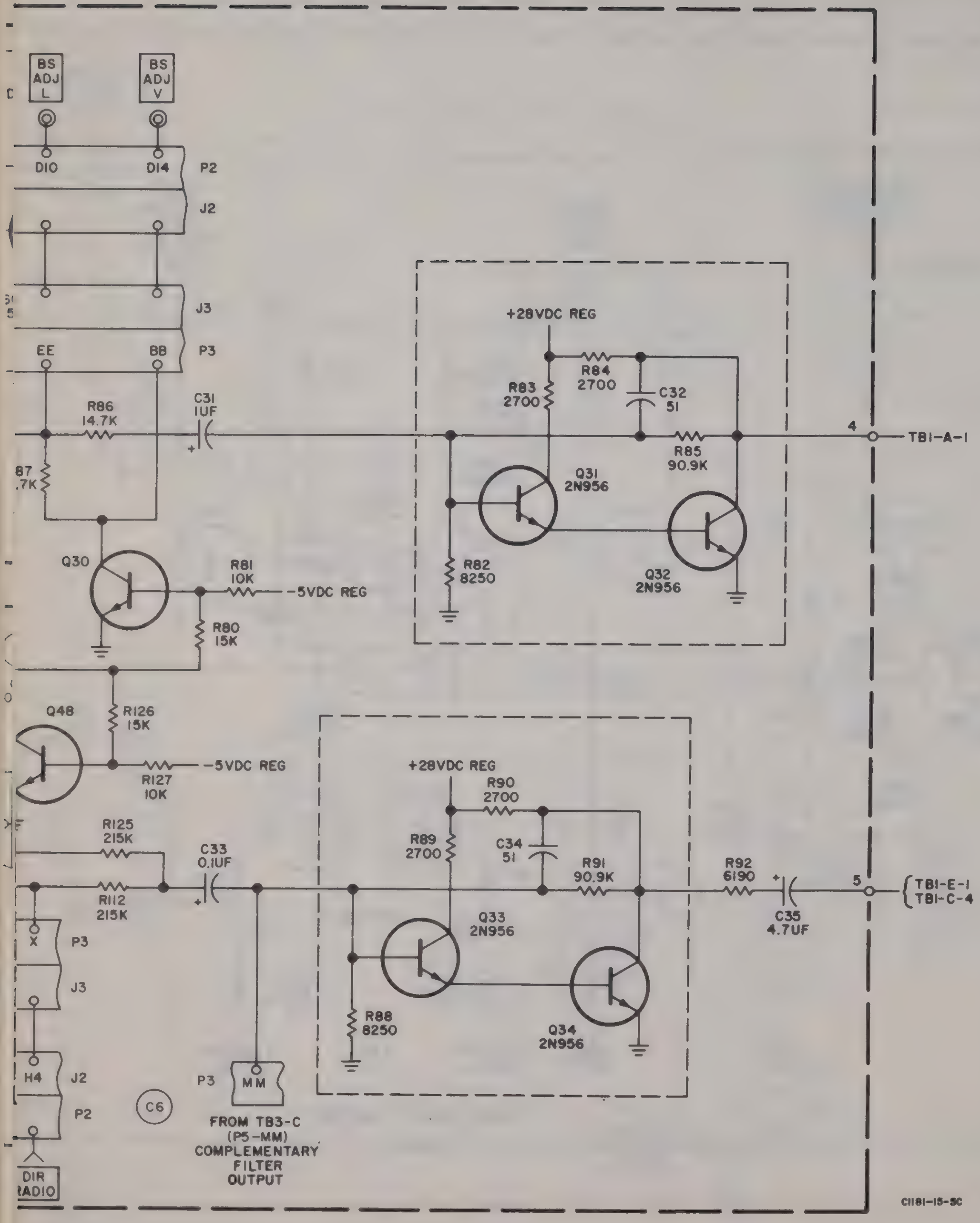

TB1-B-2
2
TB2-A
LOC FREQ
+28VDC
P4
HH
TO TB3-A
RADIO
RATE GAIN
(P6-M)
BANK SIG
ADJUST
VOR
P4
P
RADIO
RATE
BS
ADJ
L
BS
ADJ
V
G3
D10
D14
P2
J2
J3
P3
CC
EE
BB
+28VDC REG
R115
5.6MEGO
R117
6190
R114
5.6MEGO
C30
0.01UF
R116
1MEGO
Q28
2N2608
G
S
D
Q29
R118
2200
C28
0.01UF
R119
26.1K
R86
14.7K
R87
14.7K
C31
1UF
Q30
R81
10K
-5VDC REG
R80
15K
+28VDC REG
R84
2700
R83
2700
C32
51
R85
90.9K
Q31
2N956
R82
8250
Q32
2N956
4
TB1-A-1
+28VDC REG
R71
90.9K
CR20
CR21
C26
1.1UF
C27
1UF
TB1-B-1
1
CR23
CR22
C29
110UF
R73
90.9K
R124
348K
Q48
R126
15K
R127
10K
-5VDC REG
R125
215K
C33
0.1UF
R111
348K
R112
215K
+28VDC REG
R90
2700
R89
2700
C34
51
R91
90.9K
R92
6190
C35
4.7UF
5
TB1-E-1
TB1-C-4
Q33
2N956
Q34
2N956
R88
8250
TB1-A-2
TB1-C-1
3
R72
27K
Q24
R75
1.96MEGO
R74
383K
Q25
R77
15K
R76
10K
-5VDC
REG
P3
FF
J3
J2
H2
P2
RADIO LOGIC
R/L
Q26
Q27
CR24
CR25
R78
27K
CHOPPER E
R79
27K
CR32
1N754A
6.8V
CR31
1N754A
6.8V
26 ∠0° VAC
HDG PWR
A3
26 ∠180° VAC
HDG PWR
RADIO RATE LIMITER
TB1-D
X
P3
J3
H4
J2
P2
DIR
RADIO
C6
P3
MM
FROM TB3-C
(P5-MM)
COMPLEMENTARY
FILTER
OUTPUT
C1181-15-5C

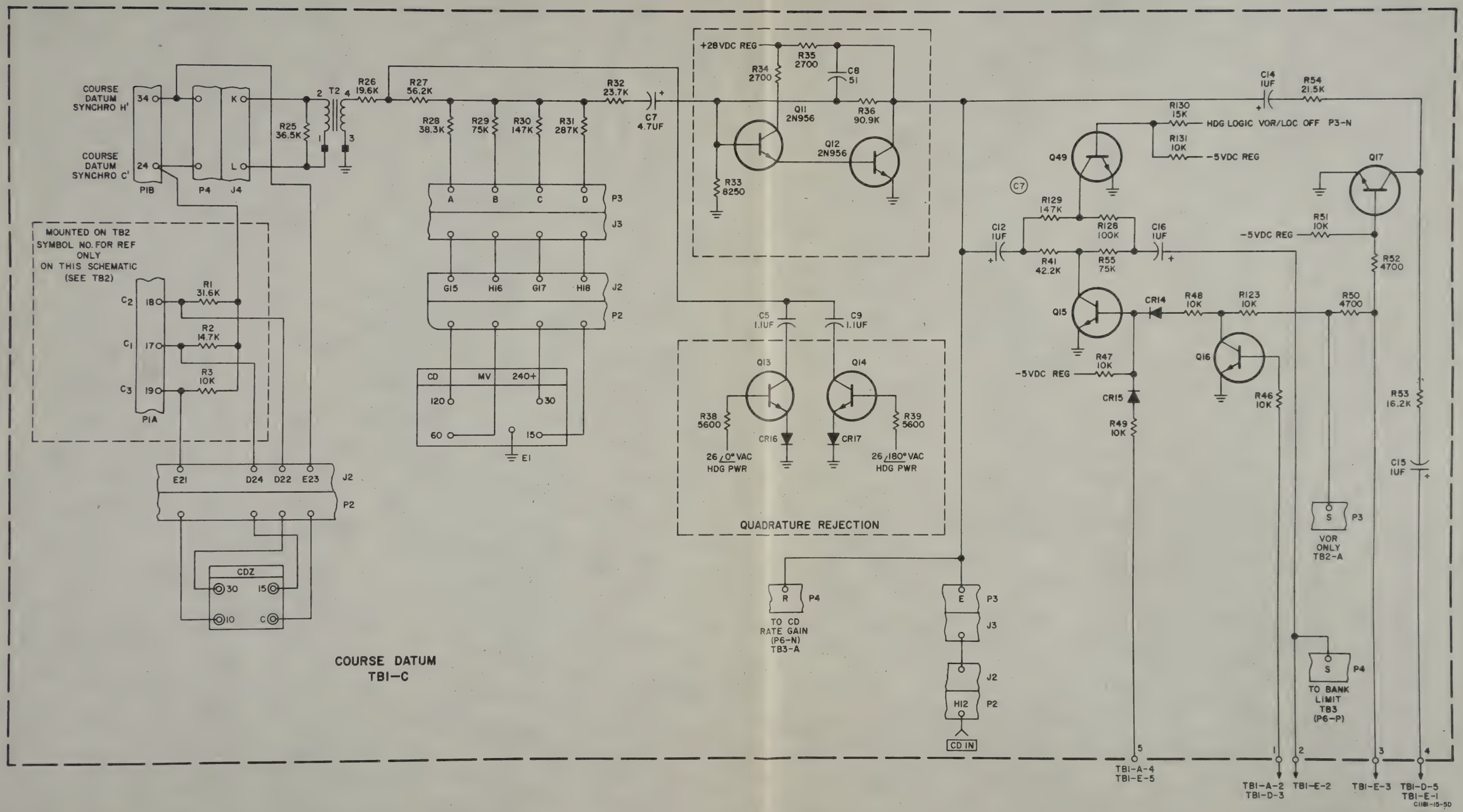
562R-1 Roll Steering Computer, Schematic Diagram TB1 (Sheet 4 of 6)
Figure 806


BS ADJ L
BS ADJ V
D10
D14
P2
J2
J3
P3
EE
BB
R86 14.7K
C31 1UF
+28VDC REG
R83 2700
R84 2700
C32 51
R85 90.9K
4
TB1-A-1
Q31 2N956
Q32 2N956
R82 8250
87 .7K
Q30
R81 10K
-5VDC REG
R80 15K
Q48
R126 15K
R127 10K
-5VDC REG
+28VDC REG
R90 2700
R89 2700
C34 51
R91 90.9K
R92 6190
C35 4.7UF
5
TB1-E-1
TB1-C-4
R125 215K
R112 215K
C33 0.1UF
Q33 2N956
Q34 2N956
R88 8250
X
P3
J3
H4
J2
P2
C6
P3
MM
FROM TB3-C (P5-MM) COMPLEMENTARY FILTER OUTPUT
DIR RADIO
C1181-15-5C

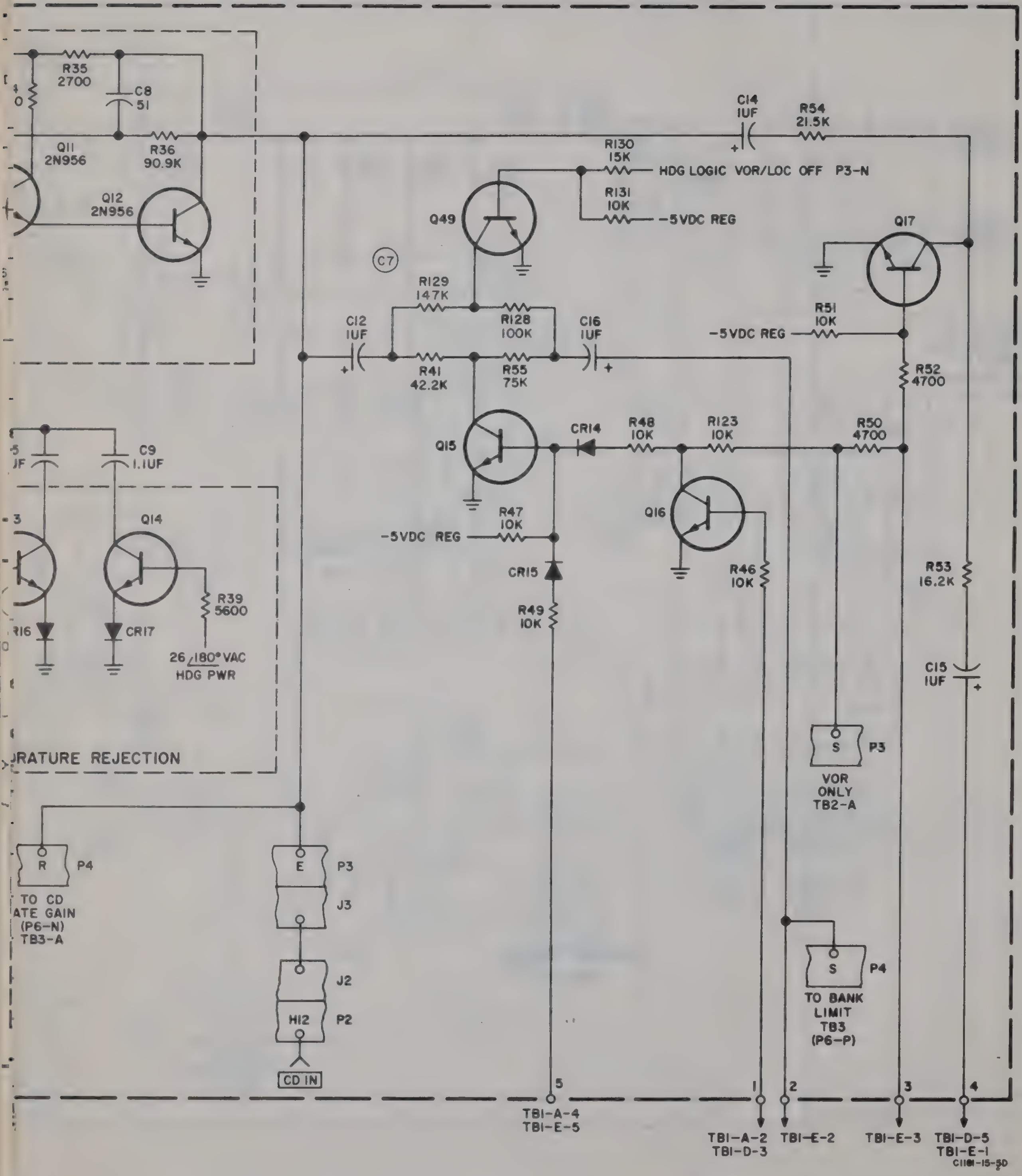

COURSE DATUM SYNCHRO H'
COURSE DATUM SYNCHRO C'
34
24
P1B
P4
J4
K
L
R25 36.5K
T2
2
4
1
3
R26 19.6K
R27 56.2K
R28 38.3K
R29 75K
R30 147K
R31 287K
R32 23.7K
C7 4.7UF
A
B
C
D
P3
J3
G15
H16
G17
H18
J2
P2
CD
MV
240+
120
30
60
15
E1
MOUNTED ON TB2 SYMBOL NO. FOR REF ONLY ON THIS SCHEMATIC (SEE TB2)
C2
C1
C3
18
17
19
R1 31.6K
R2 14.7K
R3 10K
P1A
E21
D24
D22
E23
J2
P2
CDZ
30
15
10
C
+28VDC REG
R33 8250
R38 5600
26 /0° VAC HDG PWR
Q1
QUAD
COURSE DATUM
TB1–C

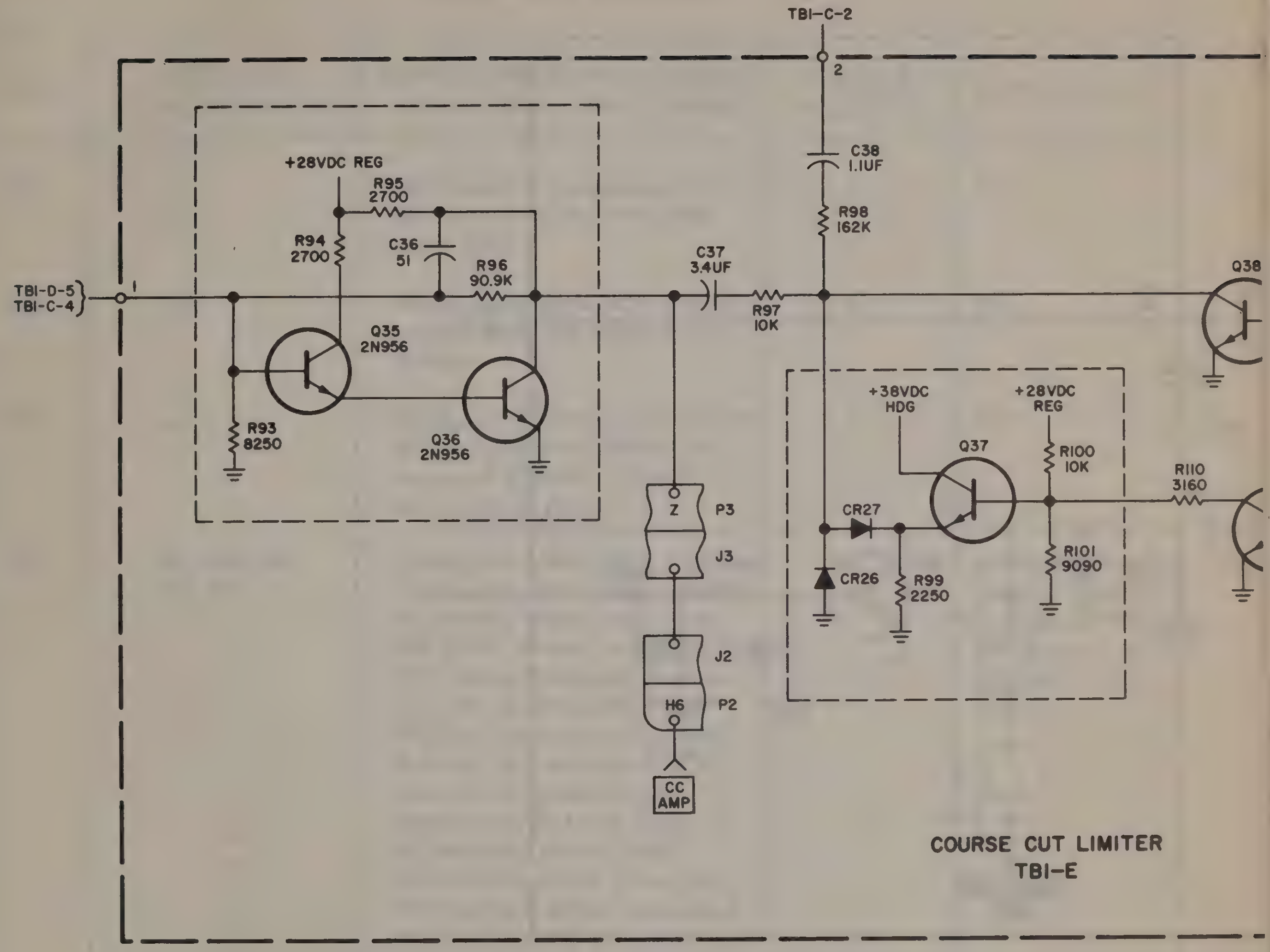
562R-1 Roll Steering Computer, Schematic Diagram TB1 (Sheet 5 of 6)
Figure 806

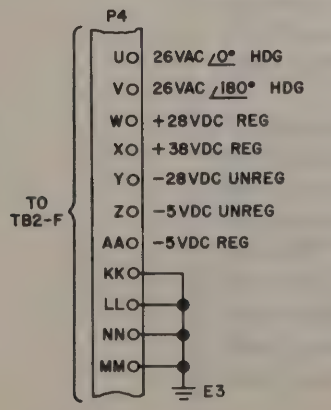

BS ADJ L
BS ADJ V
D10
D14
P2
J2
J3
P3
EE
BB
R86 14.7K
C31 1UF
87 .7K
Q30
R81 10K
-5VDC REG
R80 15K
Q48
R126 15K
R127 10K
-5VDC REG
R125 215K
R112 215K
C33 0.1UF
X
P3
J3
H4
J2
P2
DIR RADIO
C6
P3
MM
FROM TB3-C (P5-MM) COMPLEMENTARY FILTER OUTPUT
+28VDC REG
R83 2700
R84 2700
C32 51
R85 90.9K
Q31 2N956
Q32 2N956
R82 8250
4
TB1-A-1
+28VDC REG
R90 2700
R89 2700
C34 51
R91 90.9K
Q33 2N956
Q34 2N956
R88 8250
R92 6190
C35 4.7UF
5
TB1-E-1
TB1-C-4
C1181-15-5C


COURSE DATUM SYNCHRO H'
COURSE DATUM SYNCHRO C'
34
24
P1B
P4
J4
K
L
R25 36.5K
T2
2
4
1
3
R26 19.6K
R27 56.2K
R28 38.3K
R29 75K
R30 147K
R31 287K
R32 23.7K
C7 4.7UF
A
B
C
D
P3
J3
G15
H16
G17
H18
J2
P2
CD
MV
240+
120
30
60
15
E1
MOUNTED ON TB2 SYMBOL NO. FOR REF ONLY ON THIS SCHEMATIC (SEE TB2)
C2
C1
C3
18
17
19
R1 31.6K
R2 14.7K
R3 10K
P1A
E21
D24
D22
E23
J2
P2
CDZ
30
15
10
C
COURSE DATUM
TB1-C
+28VDC REG
R35 2700
R34 2700
C8 51
R36 90.9K
Q11 2N956
Q12 2N956
R33 8250
C5 1.1UF
C9 1.1UF
Q13
Q14
R38 5600
R39 5600
CR16
CR17
26 /0° VAC HDG PWR
26 /180° VAC HDG PWR
QUADRATURE REJECTION
P4
R
TO CD RATE GAIN (P6-N) TB3-A
E
P3
J3
J2
H12
P2
CD IN
C14 1UF
R54 21.5K
R130 15K
HDG LOGIC VOR/LOC OFF P3-N
R131 10K
-5VDC REG
Q49
Q17
C7
R129 147K
R128 100K
C12 1UF
R41 42.2K
R55 75K
C16 1UF
R51 10K
-5VDC REG
R52 4700
Q15
CR14
R48 10K
R123 10K
R50 4700
R47 10K
-5VDC REG
Q16
CR15
R49 10K
R46 10K
R53 16.2K
C15 1UF
S
P3
VOR ONLY TB2-A
S
P4
TO BANK LIMIT TB3 (P6-P)
5
1
2
3
4
TB1-A-4 TB1-E-5
TB1-A-2 TB1-D-3
TB1-E-2
TB1-E-3
TB1-D-5 TB1-E-1
C1181-15-5D

562R-1 Roll Steering Computer, Schematic Diagram TB1 (Sheet 5 of 6)
Figure 806


R35
2700
C8
51
Q11
2N956
R36
90.9K
Q12
2N956
C14
1UF
R54
21.5K
R130
15K
HDG LOGIC VOR/LOC OFF P3-N
R131
10K
-5VDC REG
Q49
Q17
C7
R129
147K
R128
100K
C12
1UF
C16
1UF
R41
42.2K
R55
75K
R51
10K
-5VDC REG
R52
4700
Q15
CR14
R48
10K
R123
10K
R50
4700
C9
1.1UF
Q14
Q16
R47
10K
-5VDC REG
CR15
R46
10K
R53
16.2K
R39
5600
CR17
26 ∠180° VAC
HDG PWR
R49
10K
C15
1UF
S
P3
VOR
ONLY
TB2-A
RATURE REJECTION
R
P4
TO CD
ATE GAIN
(P6-N)
TB3-A
E
P3
J3
J2
H12
P2
CD IN
S
P4
TO BANK
LIMIT
TB3
(P6-P)
5
TB1-A-4
TB1-E-5
1
2
3
4
TB1-A-2
TB1-D-3
TB1-E-2
TB1-E-3
TB1-D-5
TB1-E-1
C1181-15-5D


TBI-C-2
2
+28VDC REG
R95
2700
R94
2700
C36
51
R96
90.9K
TBI-D-5
TBI-C-4
1
Q35
2N956
Q36
2N956
R93
8250
C37
3.4UF
R97
10K
C38
1.1UF
R98
162K
Q38
Z
P3
J3
J2
H6
P2
CC
AMP
+38VDC
HDG
+28VDC
REG
Q37
R100
10K
R110
3160
CR27
CR26
R99
2250
R101
9090
COURSE CUT LIMITER
TBI-E

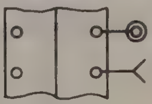

P4
UO 26VAC /0° HDG
VO 26VAC /180° HDG
WO +28VDC REG
XO +38VDC REG
YO -28VDC UNREG
ZO -5VDC UNREG
AAO -5VDC REG
KK
LL
NN
MM
E3
TO
TB2-F

NOTES:

① UNLESS OTHERWISE INDICATED, ALL RESISTANCE VALUES ARE IN OHMS, AND ALL CAPACITANCE VALUES ARE IN PICOFARADS.

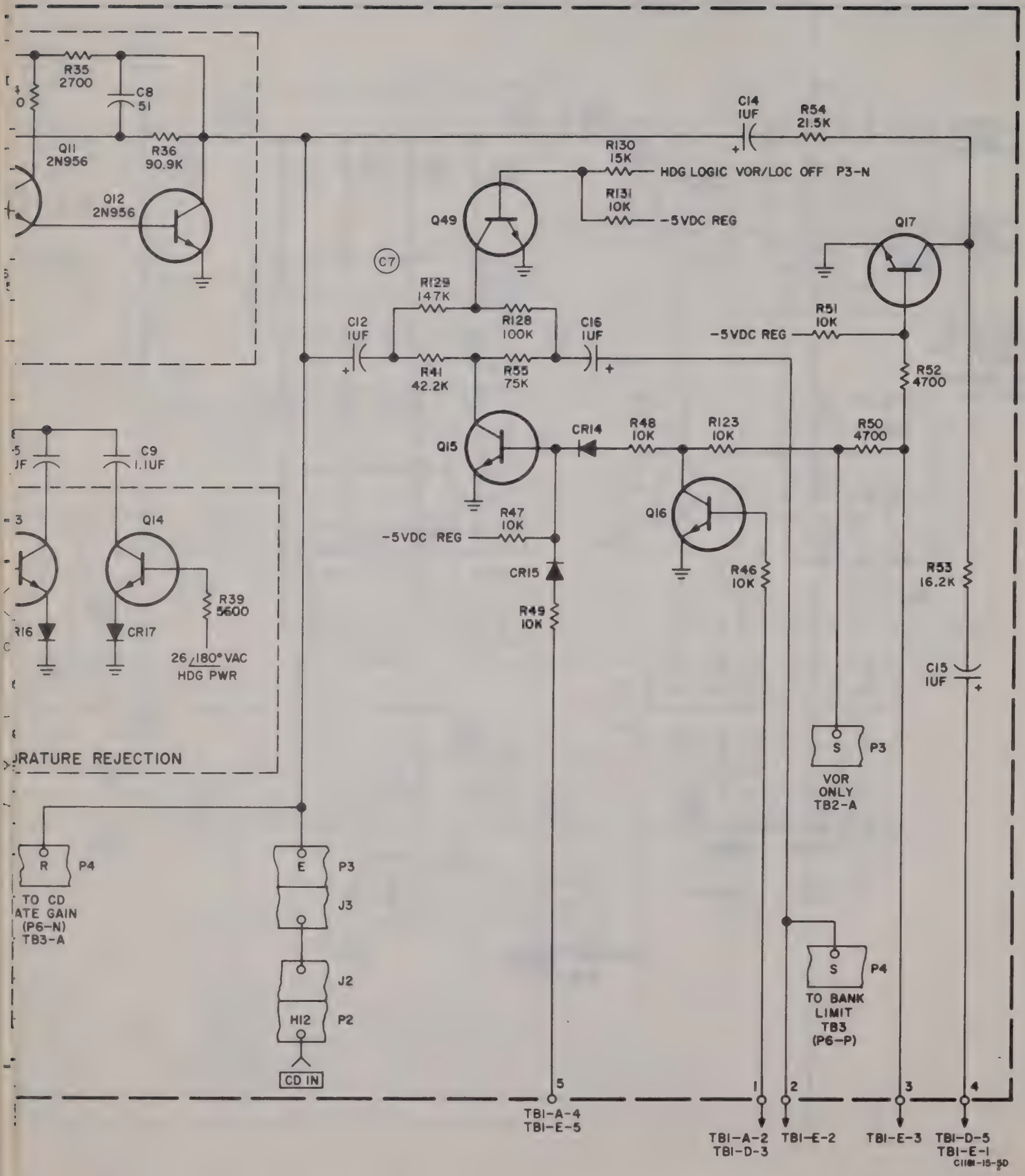
② UNLESS OTHERWISE INDICATED, ALL TRANSISTORS ARE TYPE 2N718A.

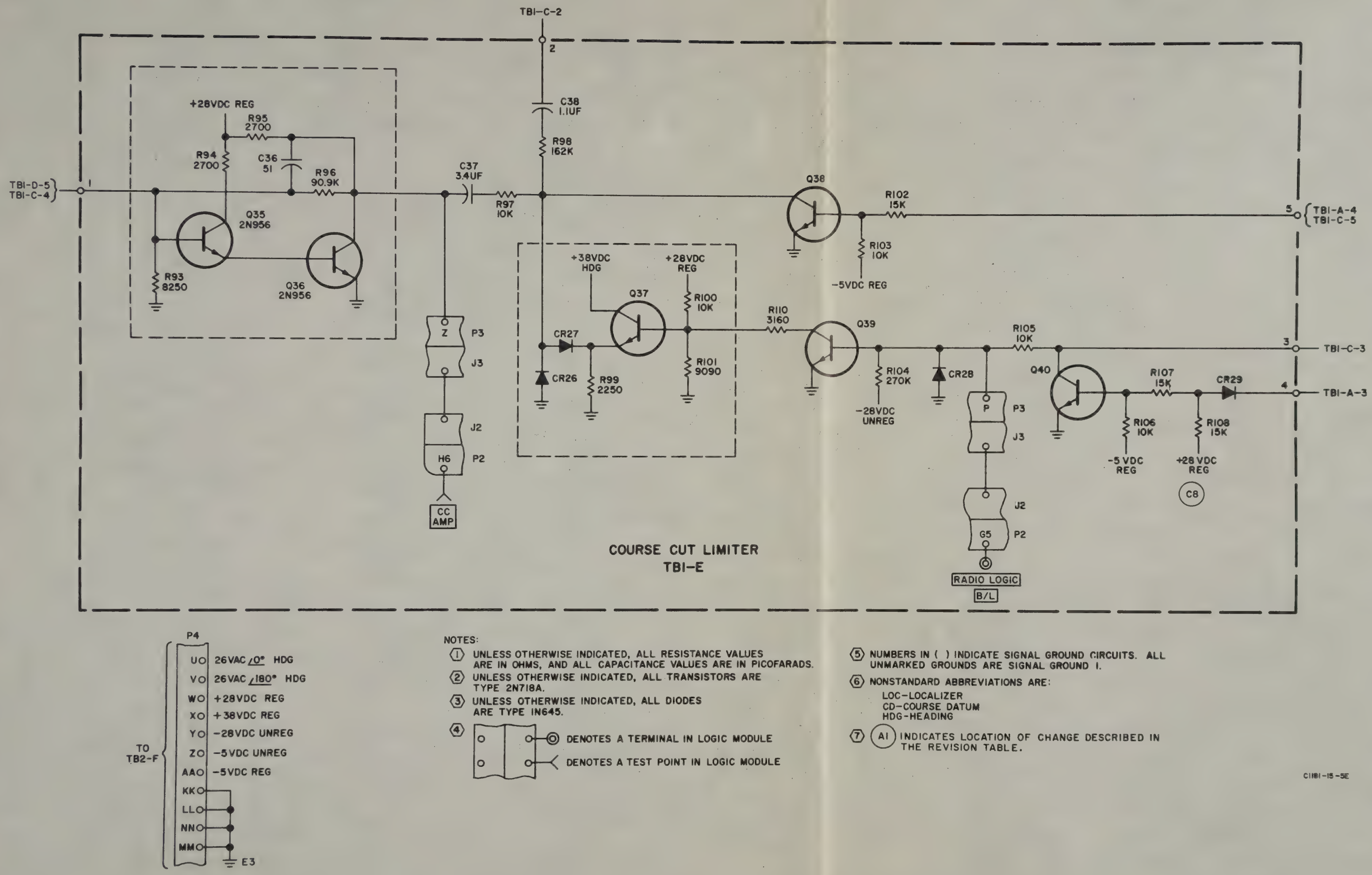
③ UNLESS OTHERWISE INDICATED, ALL DIODES ARE TYPE 1N645.

④

DENOTES A TERMINAL IN LOGIC MODULE

DENOTES A TEST POINT IN LOGIC MODULE

562R-1 Roll Steering Computer, Schematic Diagram TB1 (Sheet 6 of 6)
Figure 806


R35
2700
C8
51
Q11
2N956
R36
90.9K
Q12
2N956
C14
1UF
R54
21.5K
R130
15K
HDG LOGIC VOR/LOC OFF P3-N
R131
10K
-5VDC REG
Q49
Q17
C7
R129
147K
R128
100K
C12
1UF
C16
1UF
R41
42.2K
R55
75K
R51
10K
-5VDC REG
R52
4700
Q15
CR14
R48
10K
R123
10K
R50
4700
C9
1.1UF
Q14
Q16
R47
10K
-5VDC REG
CR15
R46
10K
R53
16.2K
R39
5600
CR17
26 ∠180° VAC
HDG PWR
R49
10K
C15
1UF
RATURE REJECTION
S
P3
VOR
ONLY
TB2-A
R
P4
E
P3
TO CD
ATE GAIN
(P6-N)
TB3-A
J3
J2
S
P4
TO BANK
LIMIT
TB3
(P6-P)
H12
P2
CD IN
5
1
2
3
4
TB1-A-4
TB1-E-5
TB1-A-2
TB1-D-3
TB1-E-2
TB1-E-3
TB1-D-5
TB1-E-1
C1181-15-5D


TB1-C-2
2
TB1-D-5
TB1-C-4
1
+28VDC REG
R95 2700
R94 2700
C36 51
R96 90.9K
Q35 2N956
Q36 2N956
R93 8250
C38 1.1UF
R98 162K
C37 3.4UF
R97 10K
Q38
R102 15K
R103 10K
-5VDC REG
5
TB1-A-4
TB1-C-5
+38VDC HDG
+28VDC REG
Q37
R100 10K
R101 9090
CR27
CR26
R99 2250
R110 3160
Q39
R104 270K
-28VDC UNREG
CR28
R105 10K
3
TB1-C-3
Q40
R107 15K
CR29
4
TB1-A-3
R106 10K
-5 VDC REG
R108 15K
+28 VDC REG
C8
Z
P3
J3
J2
H6
P2
CC AMP
P
P3
J3
J2
G5
P2
RADIO LOGIC
B/L
COURSE CUT LIMITER
TB1-E
P4
UO 26VAC /0° HDG
VO 26VAC /180° HDG
WO +28VDC REG
XO +38VDC REG
YO -28VDC UNREG
ZO -5VDC UNREG
AAO -5VDC REG
KK
LL
NN
MM
E3
TO TB2-F
C1181-15-5E

NOTES:

① UNLESS OTHERWISE INDICATED, ALL RESISTANCE VALUES ARE IN OHMS, AND ALL CAPACITANCE VALUES ARE IN PICOFARADS.

② UNLESS OTHERWISE INDICATED, ALL TRANSISTORS ARE TYPE 2N718A.

③ UNLESS OTHERWISE INDICATED, ALL DIODES ARE TYPE 1N645.

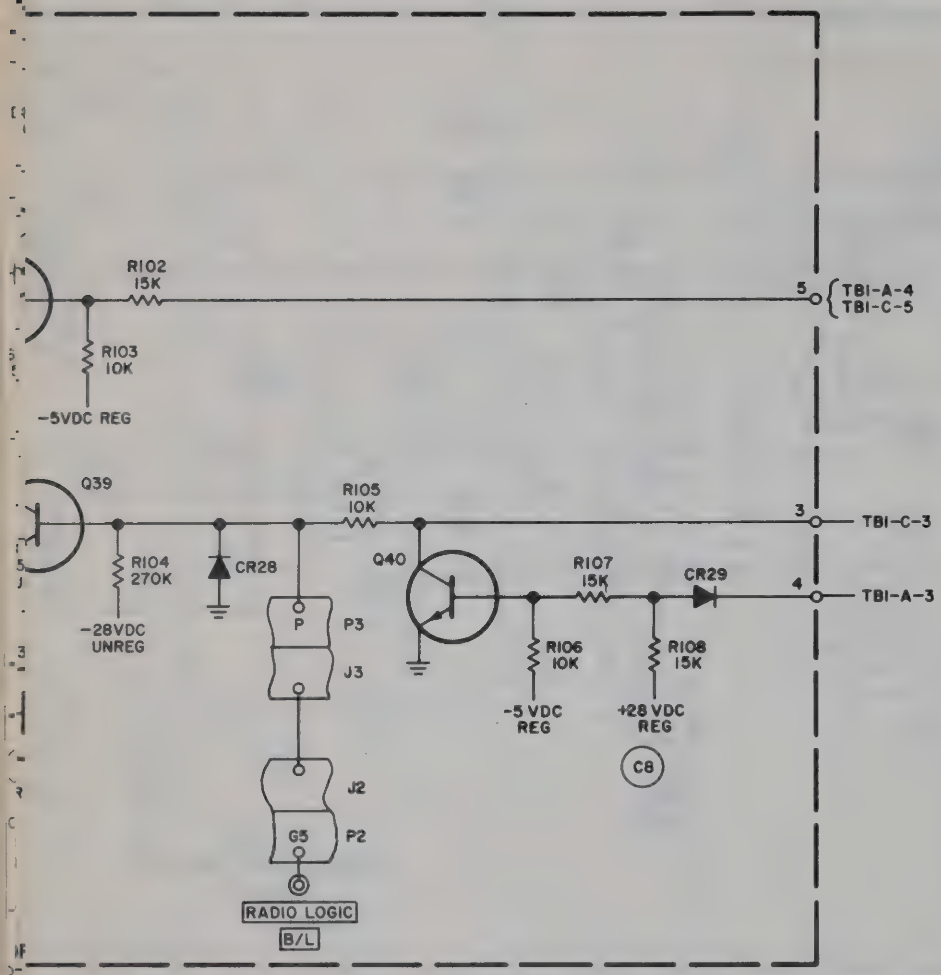
④ ◎ DENOTES A TERMINAL IN LOGIC MODULE
< DENOTES A TEST POINT IN LOGIC MODULE

⑤ NUMBERS IN ( ) INDICATE SIGNAL GROUND CIRCUITS. ALL UNMARKED GROUNDS ARE SIGNAL GROUND 1.

⑥ NONSTANDARD ABBREVIATIONS ARE:
LOC-LOCALIZER
CD-COURSE DATUM
HDG-HEADING

⑦ (A1) INDICATES LOCATION OF CHANGE DESCRIBED IN THE REVISION TABLE.

562R-1 Roll Steering Computer, Schematic Diagram TB1 (Sheet 6 of 6)
Figure 806


R102
15K
5
TBI-A-4
TBI-C-5
R103
10K
-5VDC REG
Q39
R105
10K
3
TBI-C-3
R104
270K
CR28
Q40
R107
15K
CR29
4
TBI-A-3
-28VDC
UNREG
P
P3
J3
R106
10K
R108
15K
-5 VDC
REG
+28 VDC
REG
C8
J2
G5
P2
RADIO LOGIC
B/L

⑤ NUMBERS IN ( ) INDICATE SIGNAL GROUND CIRCUITS. ALL UNMARKED GROUNDS ARE SIGNAL GROUND 1.

⑥ NONSTANDARD ABBREVIATIONS ARE:

LOC-LOCALIZER
CD-COURSE DATUM
HDG-HEADING

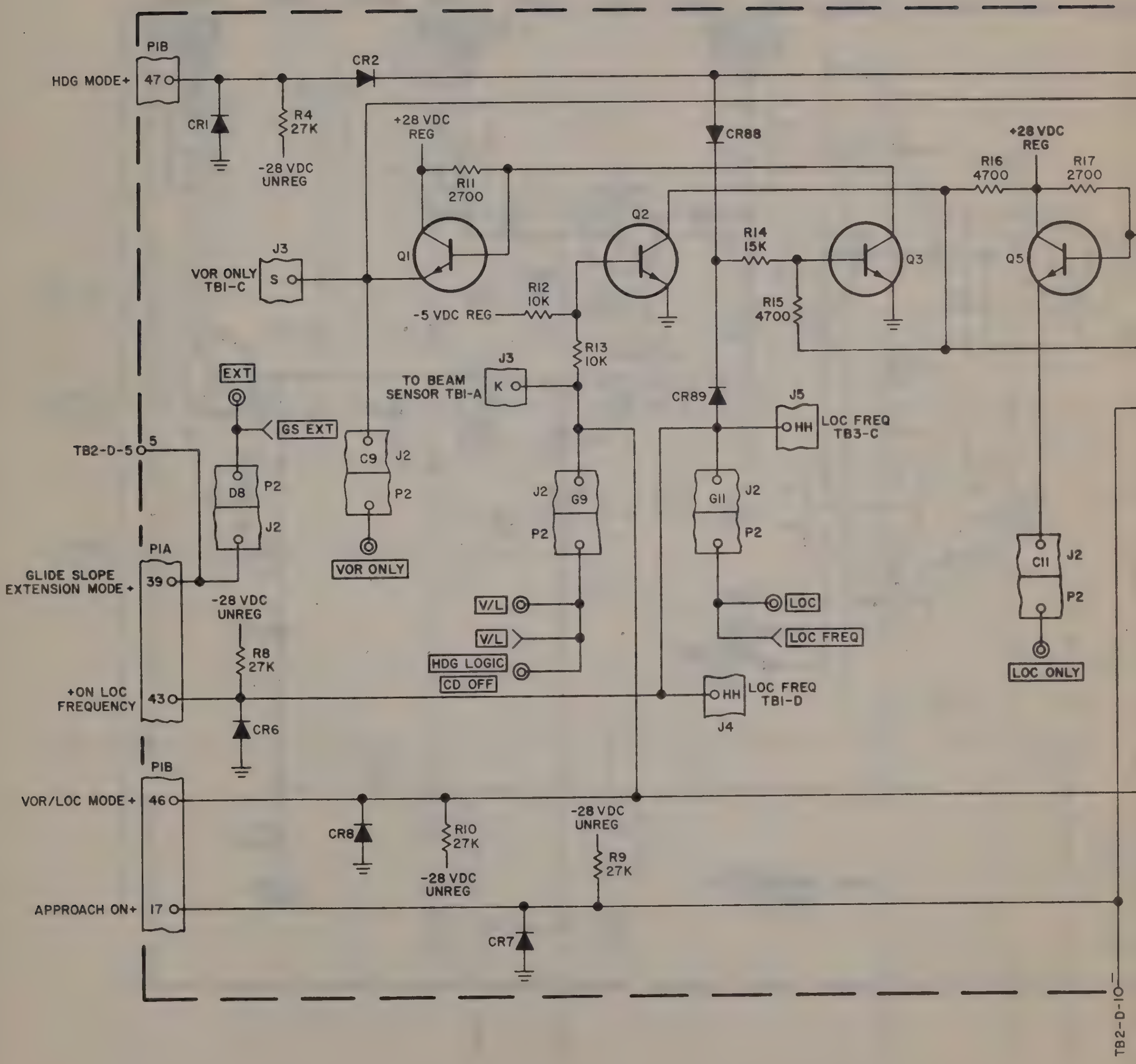
⑦ (A1) INDICATES LOCATION OF CHANGE DESCRIBED IN THE REVISION TABLE.

C1181-15-5E

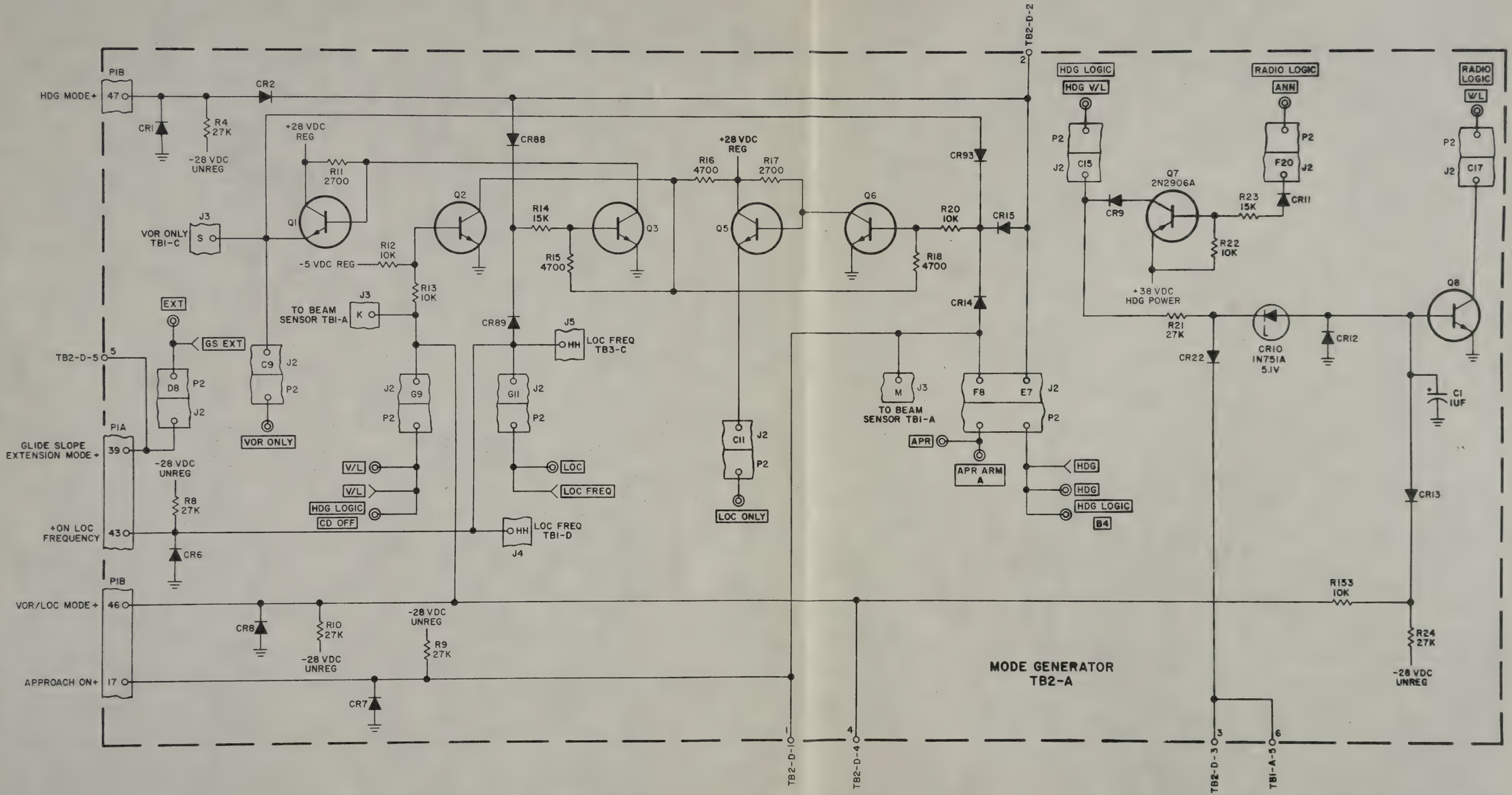
SCHEMATIC REVISIONS

PAGE	REVISION IDENTIFICATION	DESCRIPTION OF REVISION AND REASON FOR CHANGE	SERVICE BULLETIN	EFFECTIVITY
835	A1	Provided for monitoring the 28-volt dc source with the steer flag.	2	All
835	A2	Added CR35 to ensure proper operation of the steer flag circuit.	4	All
837	A3	Replaced quadrature rejection transistors with 2N3913 to increase reliability under large signal condition.	7	All
839	B1, B2, B3, B4, B5	Changed diodes CR54, CR55, CR56, and CR57 from 1N645 to 1N4003; added capacitor C34 (0.01 uf) and resistor R93 (180 ohms); changed transistor Q36 from 2N697 to 2N1711, capacitor C32 from 45 to 56 uf, resistor R98 from 10 to 27 ohms, and capacitor C33 from 18 to 33 uf; removed diode CR58. This modification is to prevent damage of the regulated internal 28-volt dc power supply during accidental shorting which may occur when unit is being tested.	13	Installed in all units at Collins bearing SN441 and above. Applicable to all units.
843	B6	Revised annunciator drive circuit to include added transistors Q29 through Q34 and associated circuit components. This modification is to increase the reliability of the annunciator circuit when operating under maximum load conditions.	12	Installed in all units at Collins bearing SN444 and above. Applicable to all units.

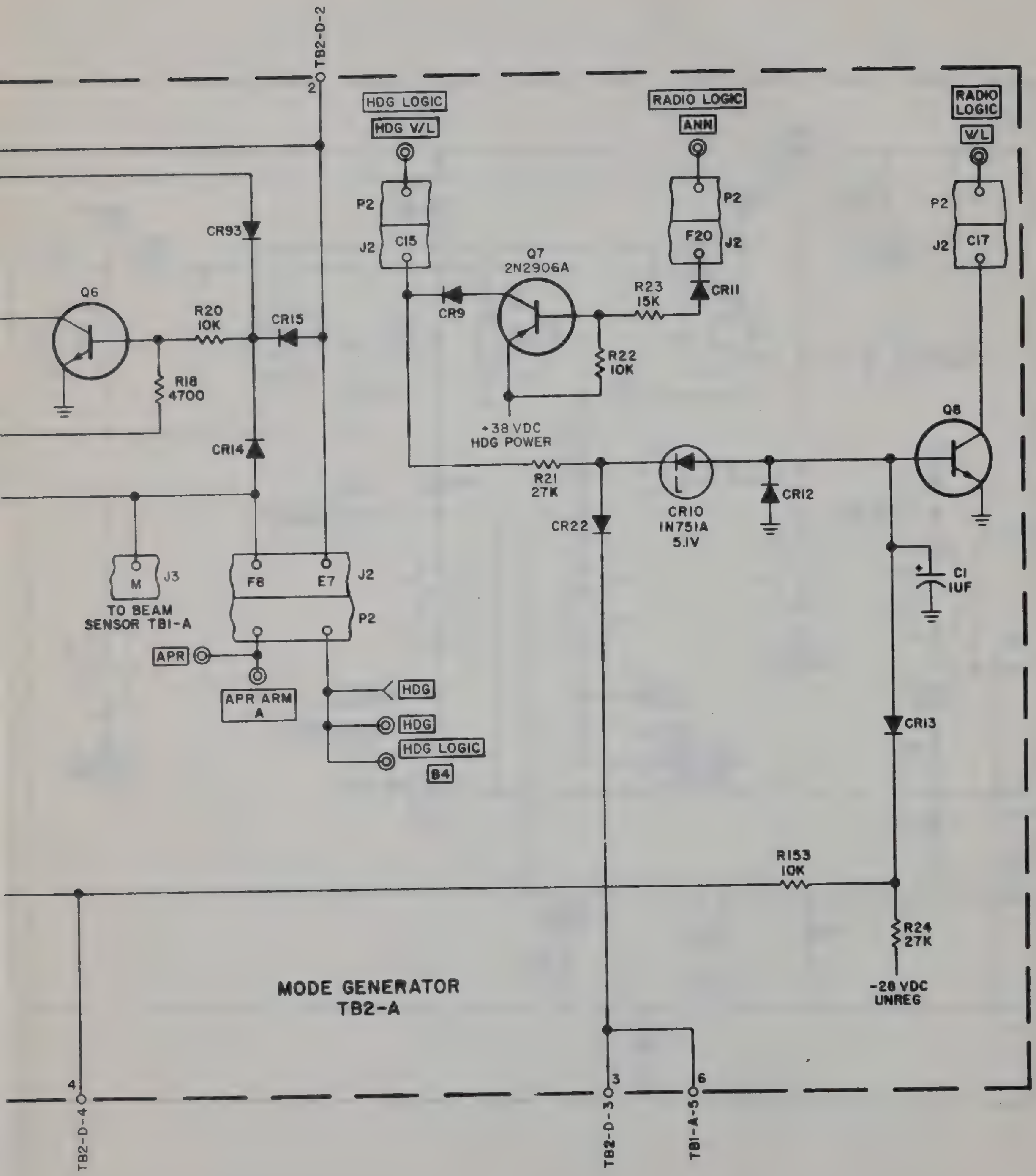
562R-1 Roll Steering Computer, Schematic Diagram TB2 (Sheet 1 of 7)
Figure 807

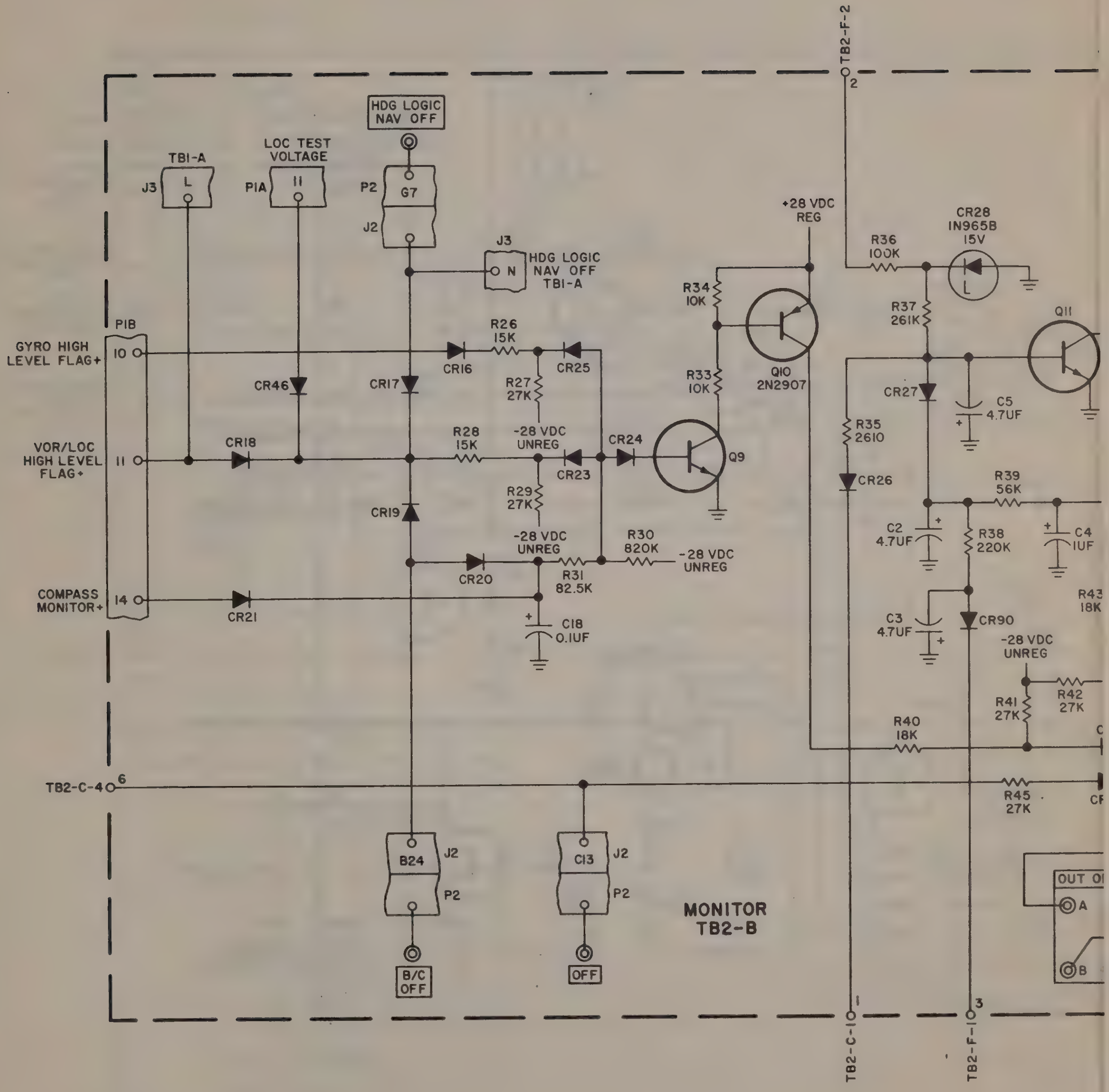

P1B
HDG MODE+
47
CR2
CR1
R4
27K
-28 VDC
UNREG
+28 VDC
REG
CR88
+28 VDC
REG
R11
2700
R16
4700
R17
2700
Q2
R14
15K
Q1
Q3
Q5
J3
VOR ONLY
TB1-C
S
R12
10K
-5 VDC REG
R15
4700
R13
10K
EXT
J3
TO BEAM
SENSOR TB1-A
K
CR89
J5
HH
LOC FREQ
TB3-C
GS EXT
TB2-D-5
5
C9
J2
P2
D8
P2
J2
J2
G9
P2
G11
J2
P2
C11
J2
P2
P1A
VOR ONLY
GLIDE SLOPE
EXTENSION MODE+
39
-28 VDC
UNREG
V/L
LOC
V/L
LOC FREQ
LOC ONLY
R8
27K
HDG LOGIC
CD OFF
+ON LOC
FREQUENCY
43
HH
LOC FREQ
TB1-D
J4
CR6
P1B
VOR/LOC MODE+
46
CR8
R10
27K
-28 VDC
UNREG
R9
27K
-28 VDC
UNREG
APPROACH ON+
17
CR7
TB2-D-10

562R-1 Roll Steering Computer, Schematic Diagram TB2 (Sheet 2 of 7)
Figure 807

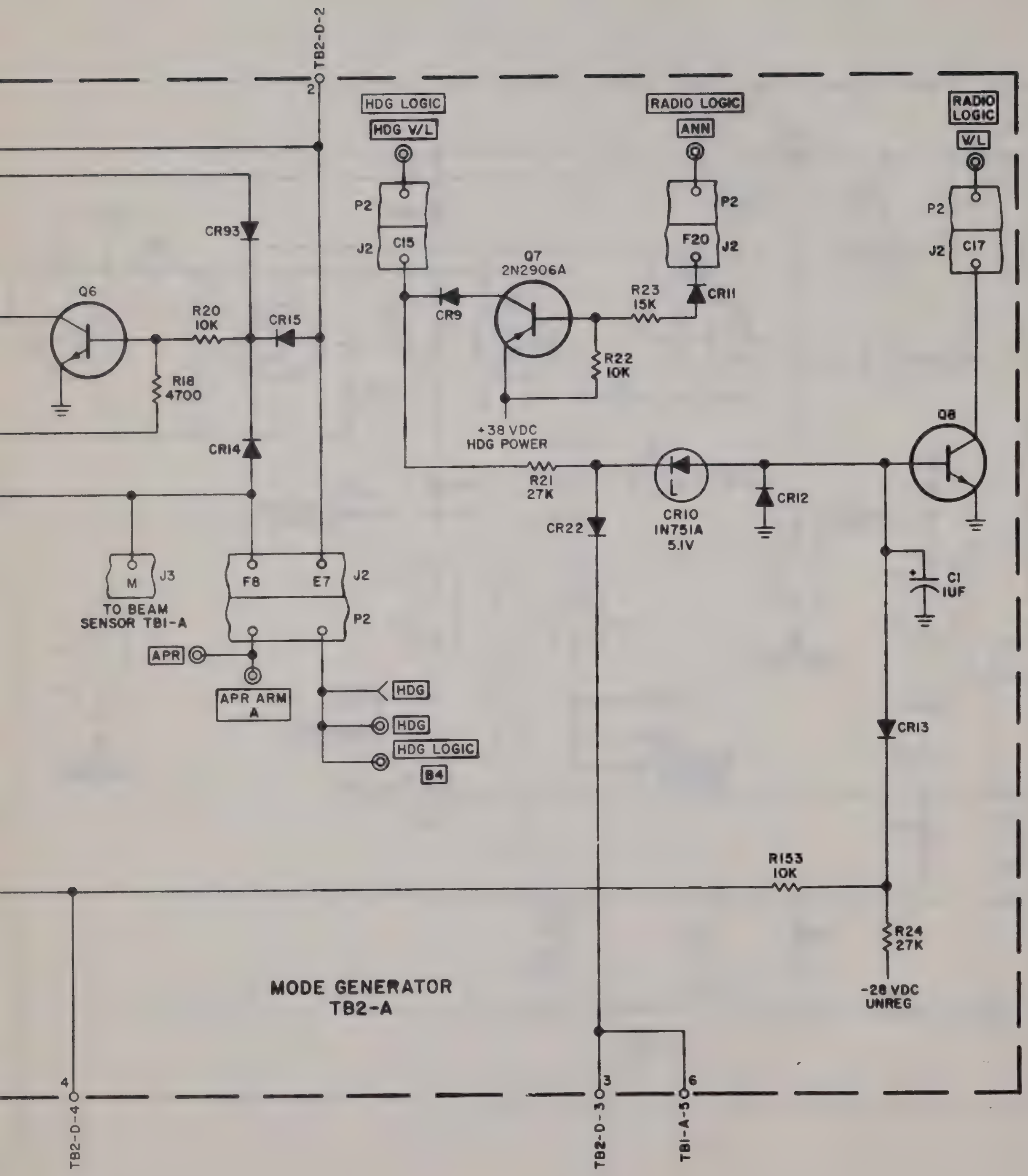

TB2-D-2
HDG MODE+
P1B
47
CR1
R4 27K
-28 VDC UNREG
CR2
CR88
+28 VDC REG
R11 2700
Q1
Q2
Q3
Q5
Q6
R14 15K
R15 4700
+28 VDC REG
R16 4700
R17 2700
R20 10K
R18 4700
CR93
CR15
CR14
VOR ONLY TB1-C
J3
S
R12 10K
-5 VDC REG
R13 10K
TO BEAM SENSOR TB1-A
K
EXT
GS EXT
TB2-D-5
D8
P2
J2
C9
VOR ONLY
G9
G11
CR89
J5
HH
LOC FREQ TB3-C
V/L
HDG LOGIC
CD OFF
LOC
LOC FREQ
LOC FREQ TB1-D
J4
C11
LOC ONLY
M
TO BEAM SENSOR TB1-A
F8
E7
APR
APR ARM A
HDG
HDG LOGIC
B4
P1A
GLIDE SLOPE EXTENSION MODE+
39
-28 VDC UNREG
R8 27K
+ON LOC FREQUENCY
43
CR6
VOR/LOC MODE+
46
CR8
R10 27K
-28 VDC UNREG
R9 27K
APPROACH ON+
17
CR7
HDG LOGIC
HDG V/L
C15
CR9
Q7 2N2906A
R23 15K
R22 10K
RADIO LOGIC
ANN
F20
CR11
+38 VDC HDG POWER
R21 27K
CR22
CR10 1N751A 5.1V
CR12
RADIO LOGIC
W/L
C17
Q8
C1 1UF
CR13
R153 10K
R24 27K
-28 VDC UNREG
MODE GENERATOR TB2-A
TB2-D-1
TB2-D-4
TB2-D-3
TB1-A-5
1
2
3
4
5
6

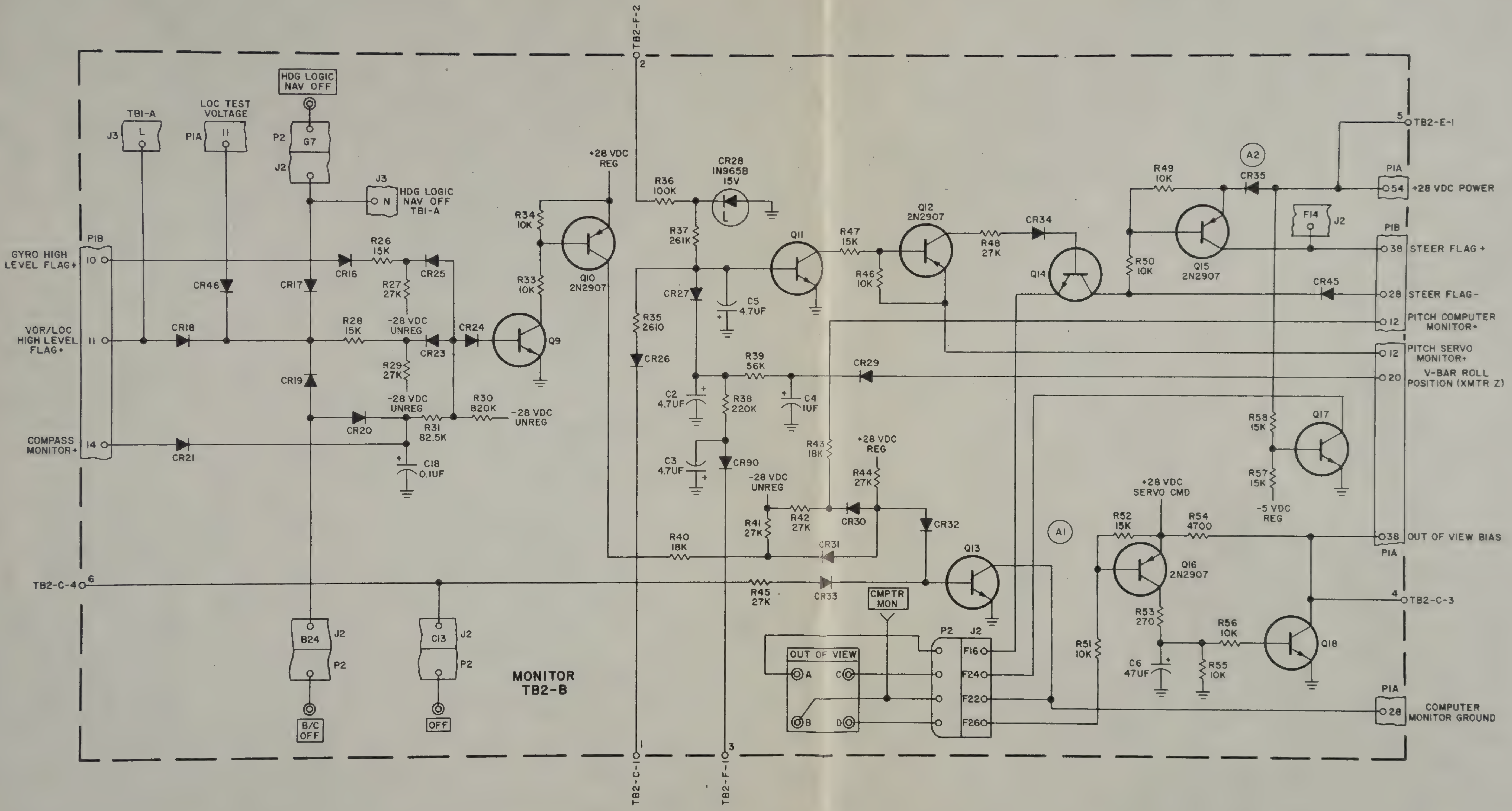
562R-1 Roll Steering Computer, Schematic Diagram TB2 (Sheet 2 of 7)
Figure 807


TB2-D-2
2
HDG LOGIC
HDG V/L
RADIO LOGIC
ANN
RADIO LOGIC
V/L
P2
J2
C15
P2
F20
J2
P2
J2
C17
CR93
Q7
2N2906A
R23
15K
CR11
Q6
R20
10K
CR15
CR9
R22
10K
R18
4700
+38 VDC
HDG POWER
Q8
CR14
R21
27K
CR10
IN751A
5.1V
CR12
CR22
M
J3
TO BEAM SENSOR TB1-A
F8
E7
J2
P2
C1
1UF
APR
APR ARM A
HDG
HDG
HDG LOGIC
B4
CR13
R153
10K
R24
27K
MODE GENERATOR
TB2-A
-28 VDC UNREG
4
TB2-D-4
3
TB2-D-3
6
TB1-A-5

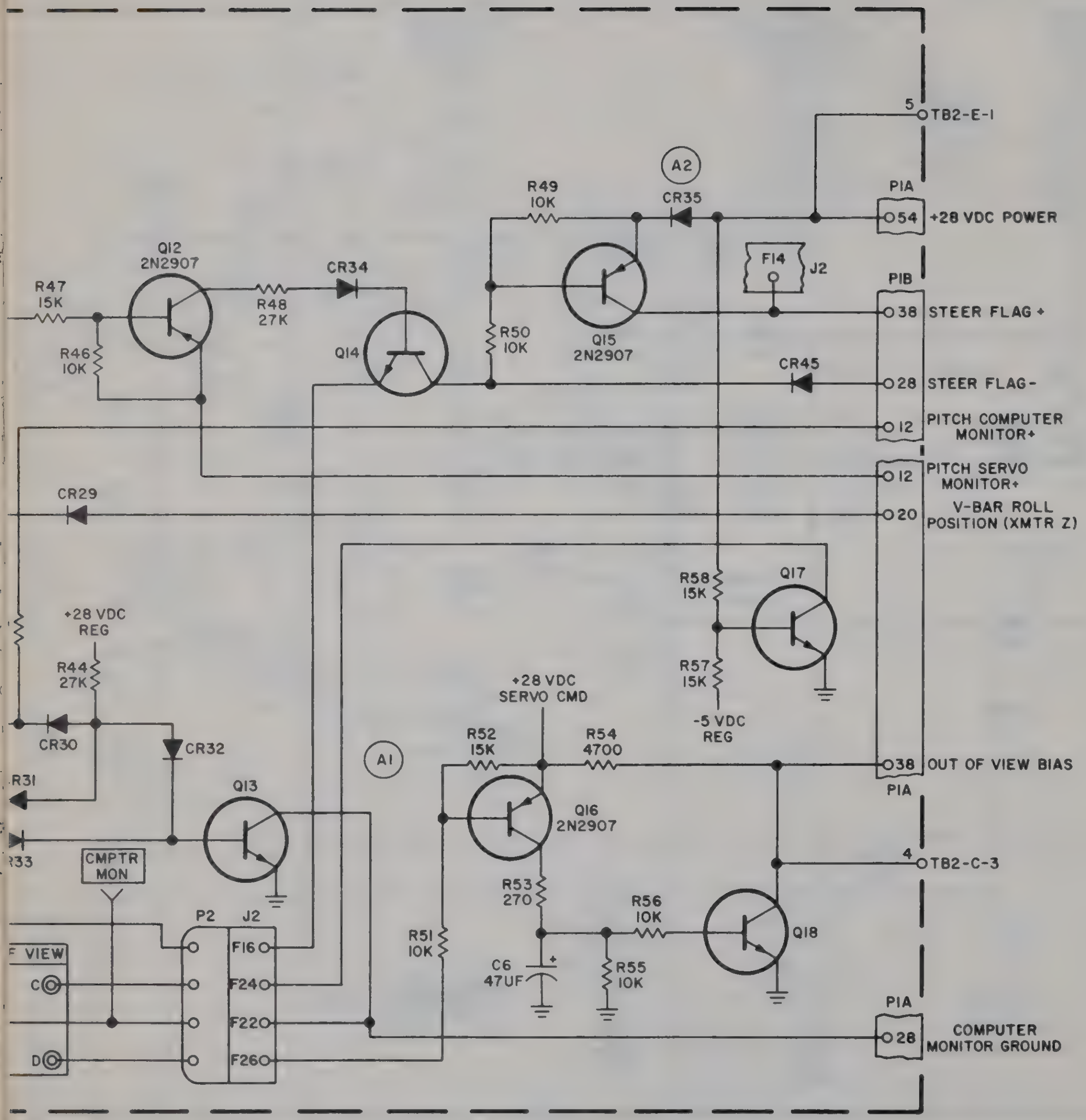

TB2-F-2
2
HDG LOGIC NAV OFF
LOC TEST VOLTAGE
TB1-A
J3
L
P1A
11
P2
G7
J2
J3
N
HDG LOGIC NAV OFF TB1-A
+28 VDC REG
CR28 1N965B 15V
R36 100K
R37 261K
R34 10K
R33 10K
Q10 2N2907
Q11
P1B
GYRO HIGH LEVEL FLAG+
10
R26 15K
CR16
CR25
CR46
CR17
R27 27K
CR27
C5 4.7UF
R35 2610
VOR/LOC HIGH LEVEL FLAG+
11
CR18
R28 15K
-28 VDC UNREG
CR23
CR24
Q9
CR26
R39 56K
CR19
R29 27K
-28 VDC UNREG
R30 820K
-28 VDC UNREG
C2 4.7UF
R38 220K
C4 1UF
COMPASS MONITOR+
14
CR20
R31 82.5K
CR21
C18 0.1UF
C3 4.7UF
CR90
-28 VDC UNREG
R43 18K
R41 27K
R42 27K
R40 18K
TB2-C-4
6
R45 27K
B24
J2
P2
C13
J2
P2
B/C OFF
OFF
MONITOR TB2-B
OUT OF
A
B
1
3
TB2-C-1
TB2-F-1

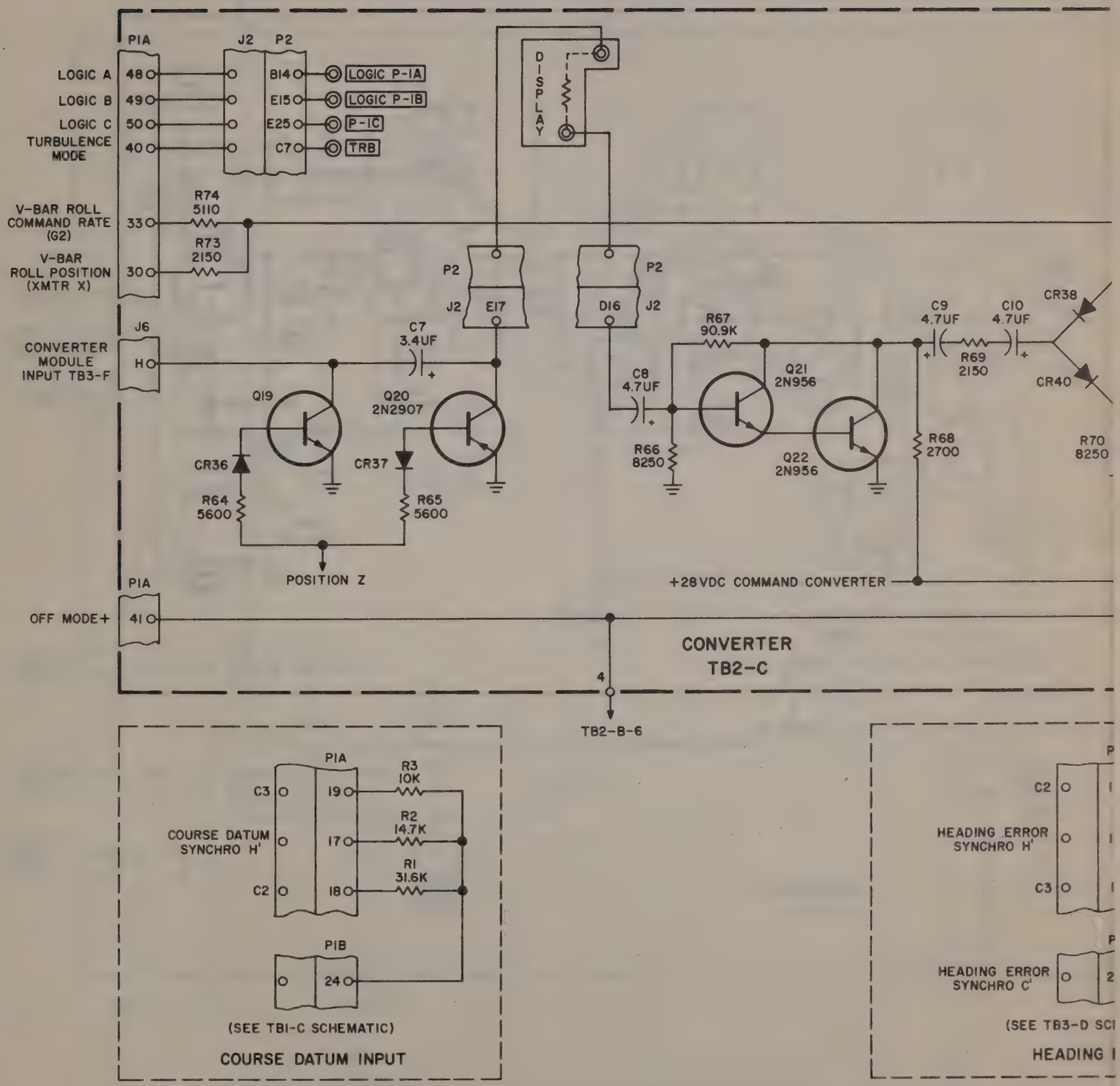
562R-1 Roll Steering Computer, Schematic Diagram TB2 (Sheet 3 of 7)
Figure 807


TB2-D-2
2
HDG LOGIC
HDG V/L
P2
J2
C15
RADIO LOGIC
ANN
P2
F20
J2
RADIO LOGIC
W/L
P2
J2
C17
CR93
Q6
R20
10K
CR15
CR9
Q7
2N2906A
R23
15K
CR11
R22
10K
R18
4700
+38 VDC
HDG POWER
CR14
R21
27K
CR10
1N751A
5.1V
CR12
Q8
CR22
M
J3
TO BEAM
SENSOR TB1-A
F8
E7
J2
P2
C1
1UF
APR
APR ARM
A
HDG
HDG
HDG LOGIC
B4
CR13
R153
10K
R24
27K
-28 VDC
UNREG
MODE GENERATOR
TB2-A
4
TB2-D-4
3
TB2-D-3
6
TB1-A-5

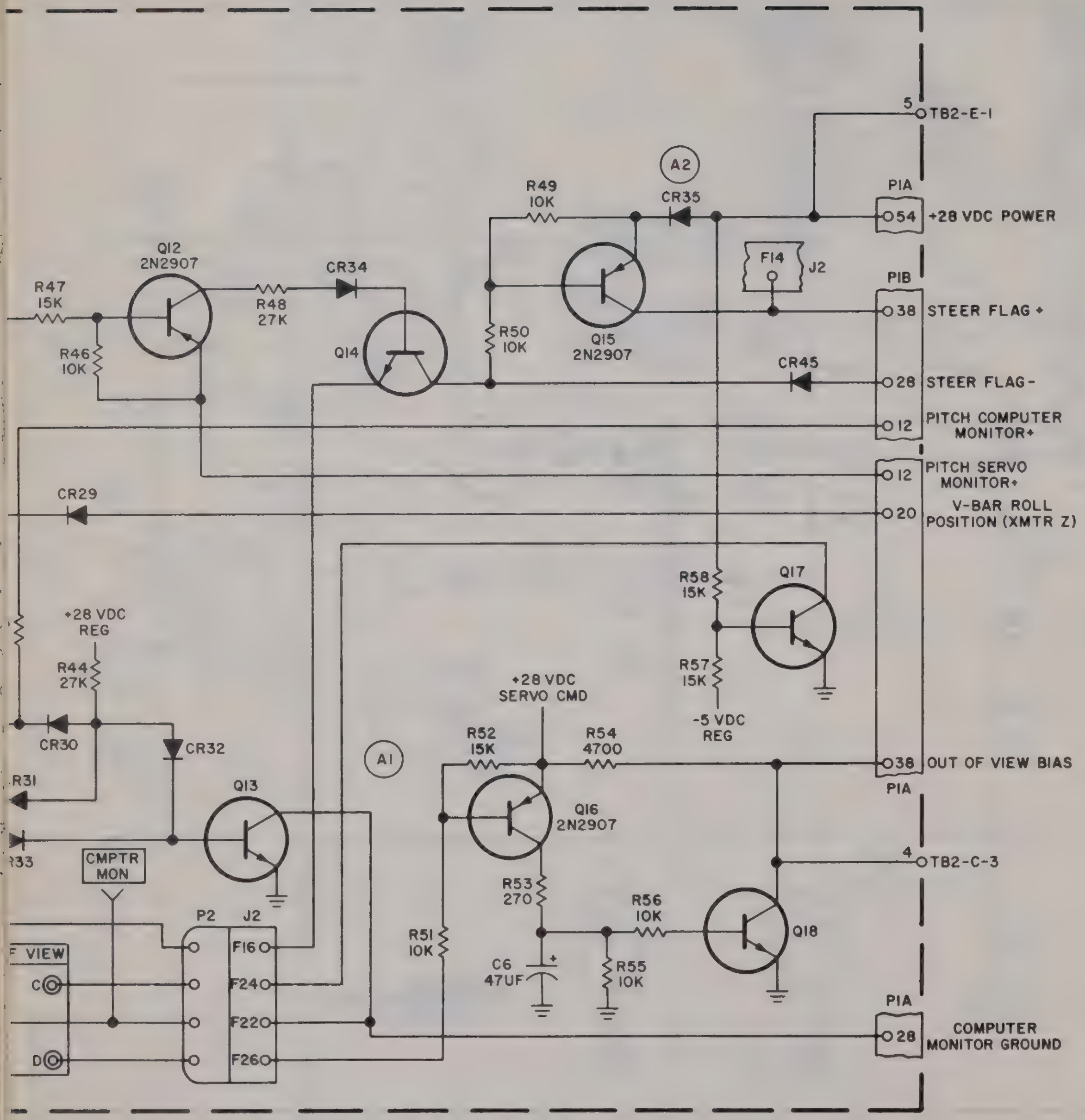

TB2-F-2
2
HDG LOGIC NAV OFF
LOC TEST VOLTAGE
TBI-A
J3
L
PIA
11
P2
G7
J2
J3
N
HDG LOGIC NAV OFF TBI-A
+28 VDC REG
R34 10K
R33 10K
Q10 2N2907
R36 100K
CR28 1N965B 15V
R37 261K
CR27
C5 4.7UF
Q11
R47 15K
Q12 2N2907
R46 10K
R48 27K
CR34
Q14
R49 10K
A2
CR35
Q15 2N2907
R50 10K
F14
J2
CR45
5
TB2-E-1
PIA
54 +28 VDC POWER
PIB
38 STEER FLAG +
28 STEER FLAG -
12 PITCH COMPUTER MONITOR+
12 PITCH SERVO MONITOR+
20 V-BAR ROLL POSITION (XMTR Z)
PIB
10 GYRO HIGH LEVEL FLAG+
11 VOR/LOC HIGH LEVEL FLAG+
14 COMPASS MONITOR+
CR16
R26 15K
CR25
CR46
CR17
R27 27K
CR18
R28 15K
-28 VDC UNREG
CR24
CR23
Q9
CR19
R29 27K
-28 VDC UNREG
R30 820K
-28 VDC UNREG
CR20
R31 82.5K
CR21
C18 0.1UF
R35 2610
CR26
R39 56K
CR29
C2 4.7UF
R38 220K
C4 1UF
C3 4.7UF
CR90
-28 VDC UNREG
R43 18K
+28 VDC REG
R44 27K
R58 15K
Q17
R57 15K
-5 VDC REG
R41 27K
R42 27K
CR30
CR32
R40 18K
CR31
+28 VDC SERVO CMD
R52 15K
R54 4700
A1
38 OUT OF VIEW BIAS
PIA
Q13
Q16 2N2907
TB2-C-4
6
R45 27K
CR33
CMPTR MON
4
TB2-C-3
R53 270
R56 10K
Q18
R51 10K
C6 47UF
R55 10K
J2
B24
P2
C13
J2
P2
MONITOR TB2-B
OUT OF VIEW
A
C
B
D
P2
J2
F16
F24
F22
F26
PIA
28 COMPUTER MONITOR GROUND
B/C OFF
OFF
1
3
TB2-C-1
TB2-F-1

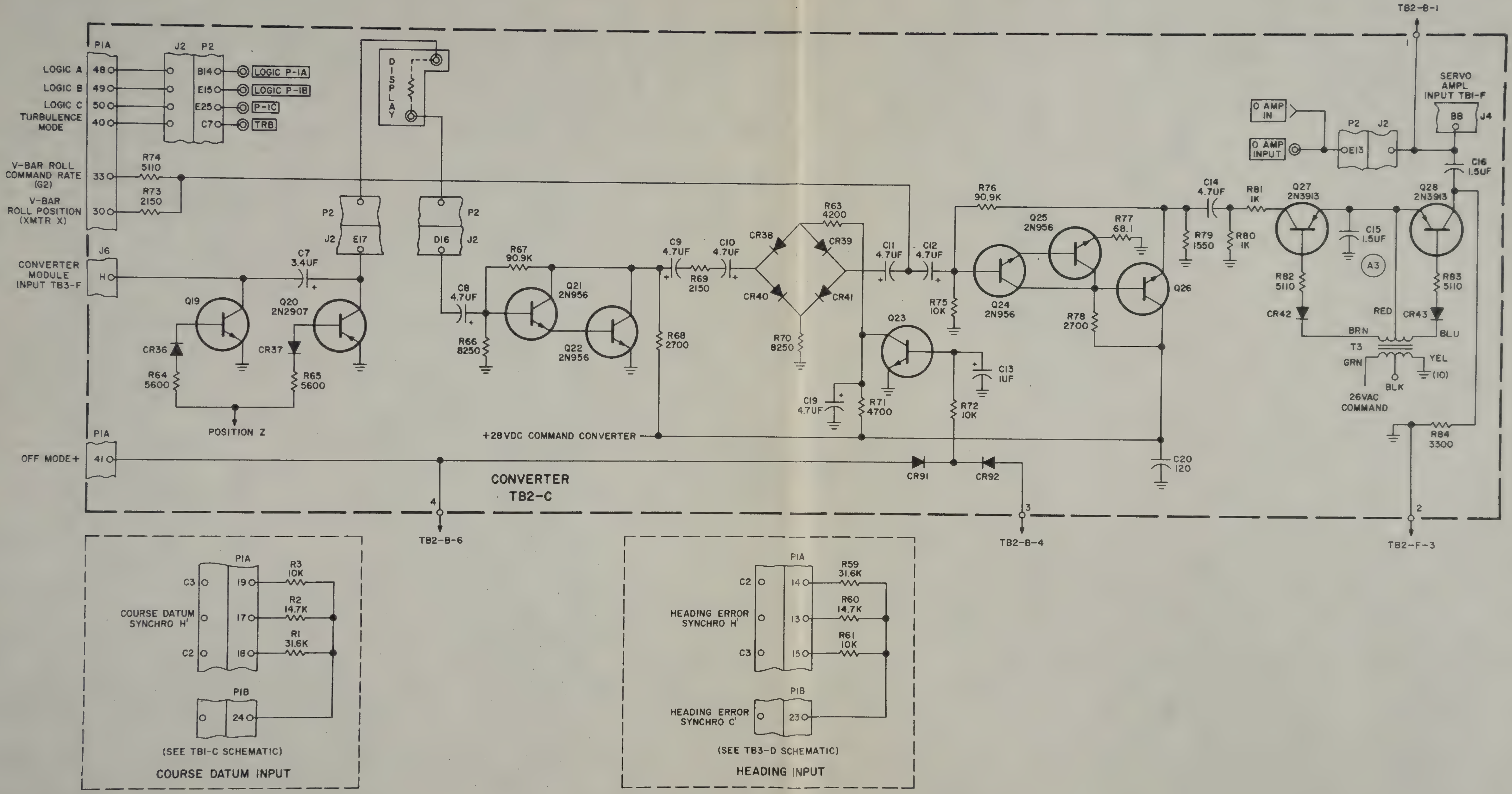
562R-1 Roll Steering Computer, Schematic Diagram TB2 (Sheet 3 of 7)
Figure 807


5
TB2-E-1
A2
R49
10K
CR35
P1A
54
+28 VDC POWER
Q12
2N2907
R47
15K
R46
10K
R48
27K
CR34
Q14
R50
10K
Q15
2N2907
F14
J2
P1B
38
STEER FLAG +
CR45
28
STEER FLAG -
12
PITCH COMPUTER
MONITOR+
12
PITCH SERVO
MONITOR+
CR29
20
V-BAR ROLL
POSITION (XMTR Z)
R58
15K
Q17
R57
15K
-5 VDC
REG
+28 VDC
REG
R44
27K
CR30
CR32
R31
R33
Q13
CMPTR
MON
A1
+28 VDC
SERVO CMD
R52
15K
R54
4700
38
OUT OF VIEW BIAS
P1A
Q16
2N2907
4
TB2-C-3
R53
270
R56
10K
Q18
R51
10K
C6
47UF
R55
10K
P2
J2
F16
F24
F22
F26
F VIEW
C
D
P1A
28
COMPUTER
MONITOR GROUND

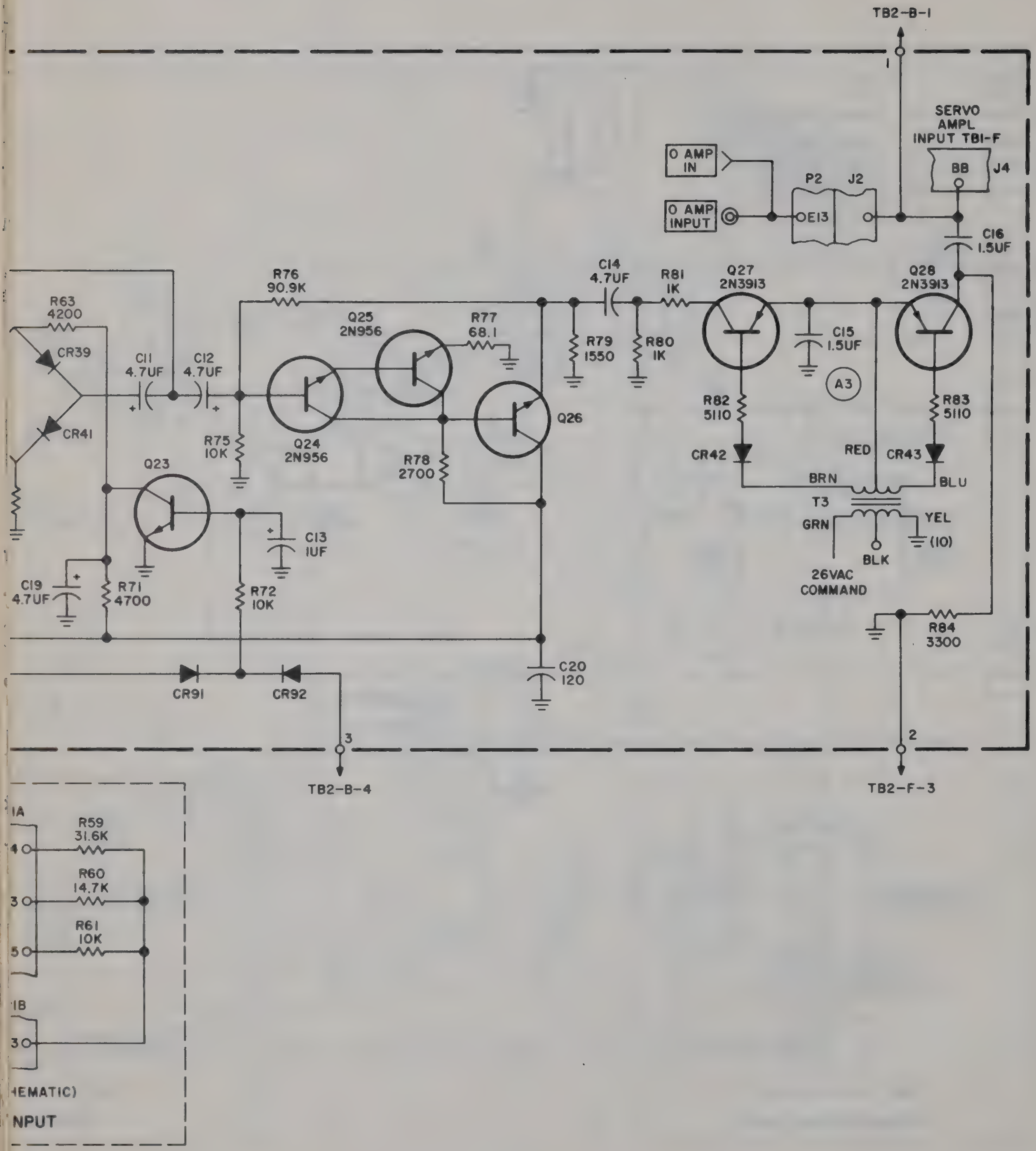

P1A
J2
P2
LOGIC A
48
B14
LOGIC P-1A
LOGIC B
49
E15
LOGIC P-1B
LOGIC C
50
E25
P-1C
TURBULENCE MODE
40
C7
TRB
D I S P L A Y
V-BAR ROLL COMMAND RATE (G2)
33
R74 5110
V-BAR ROLL POSITION (XMTR X)
30
R73 2150
P2
J2
E17
D16
J6
CONVERTER MODULE INPUT TB3-F
H
C7 3.4UF
Q19
Q20 2N2907
CR36
CR37
R64 5600
R65 5600
POSITION Z
C8 4.7UF
R66 8250
R67 90.9K
Q21 2N956
Q22 2N956
C9 4.7UF
C10 4.7UF
R69 2150
CR38
CR40
R68 2700
R70 8250
+28VDC COMMAND CONVERTER
P1A
OFF MODE+
41
CONVERTER TB2-C
4
TB2-B-6
P1A
C3
19
R3 10K
COURSE DATUM SYNCHRO H'
17
R2 14.7K
C2
18
R1 31.6K
P1B
24
(SEE TB1-C SCHEMATIC)
COURSE DATUM INPUT
C2
HEADING ERROR SYNCHRO H'
C3
HEADING ERROR SYNCHRO C'
(SEE TB3-D SC
HEADING

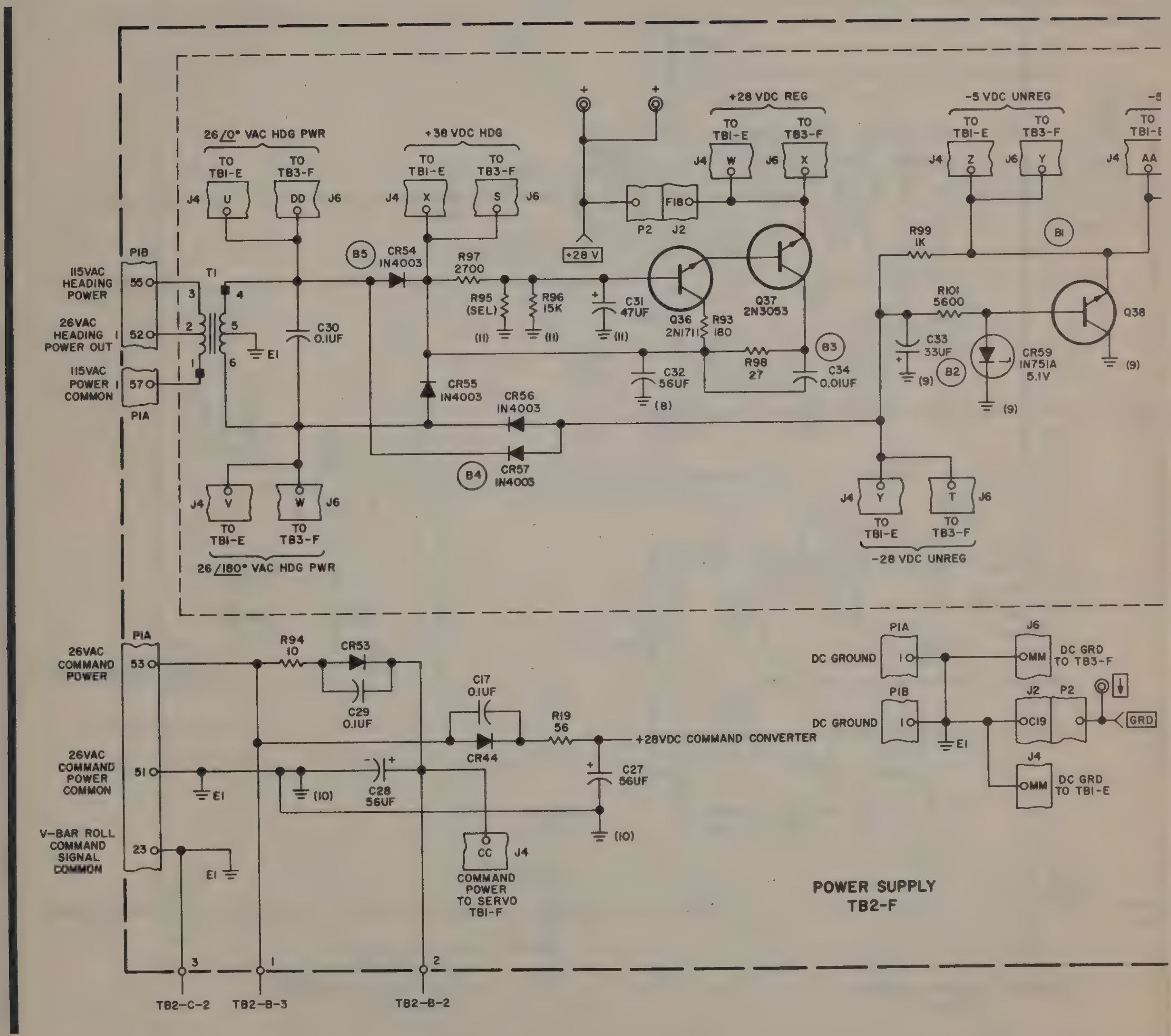
562R-1 Roll Steering Computer, Schematic Diagram TB2 (Sheet 4 of 7)
Figure 807


5
TB2-E-1
A2
R49
10K
CR35
PIA
54
+28 VDC POWER
Q12
2N2907
CR34
F14
J2
PIB
R47
15K
R48
27K
38
STEER FLAG +
R46
10K
Q14
R50
10K
Q15
2N2907
CR45
28
STEER FLAG -
12
PITCH COMPUTER
MONITOR+
12
PITCH SERVO
MONITOR+
CR29
20
V-BAR ROLL
POSITION (XMTR Z)
R58
15K
Q17
+28 VDC
REG
R44
27K
R57
15K
+28 VDC
SERVO CMD
-5 VDC
REG
CR30
CR32
R52
15K
R54
4700
A1
38
OUT OF VIEW BIAS
PIA
R31
Q13
Q16
2N2907
R33
CMPTR
MON
R53
270
4
TB2-C-3
R56
10K
P2
J2
R51
10K
Q18
F VIEW
F16
C
F24
C6
47UF
+
R55
10K
F22
PIA
D
F26
28
COMPUTER
MONITOR GROUND

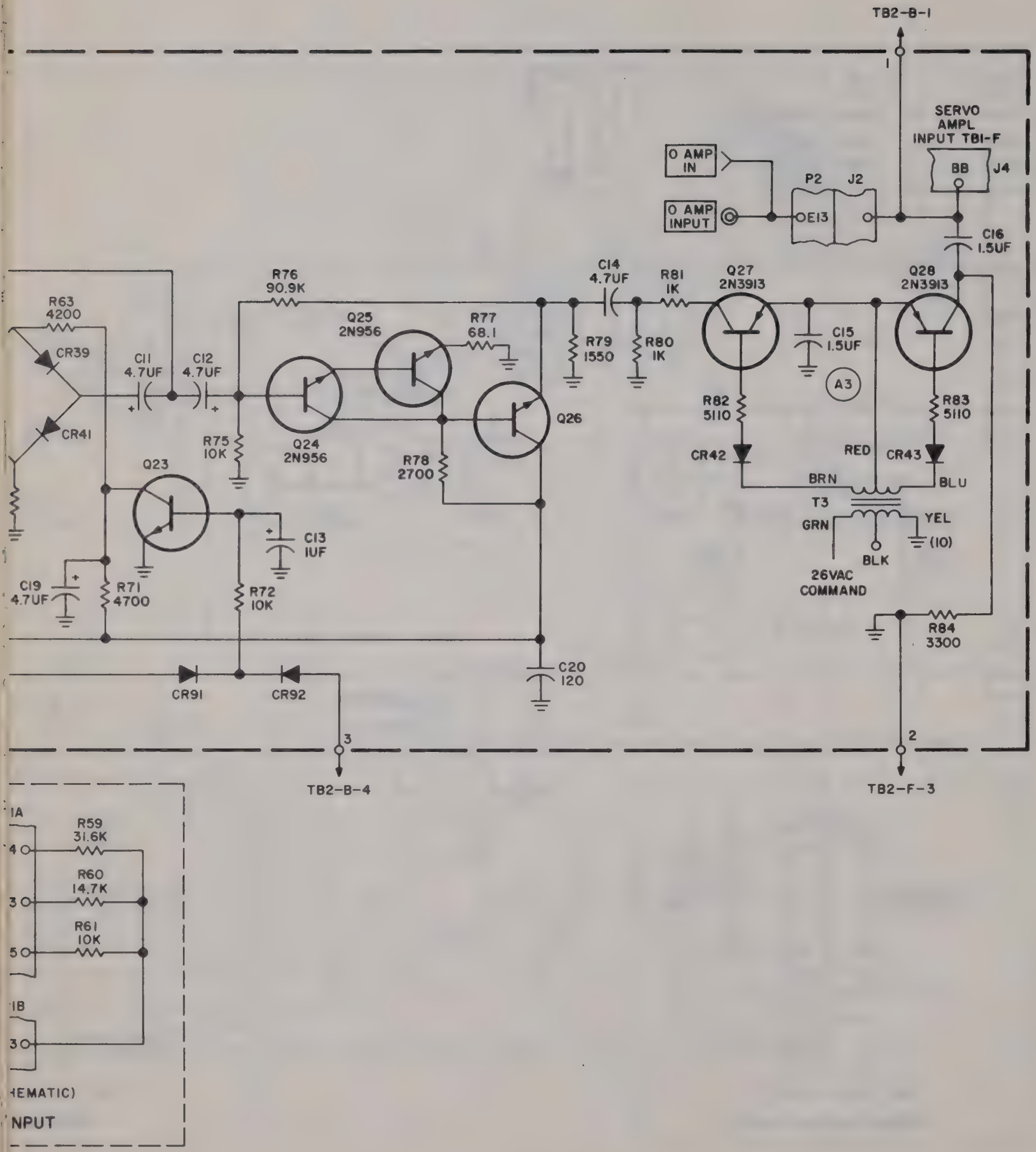

TB2-B-1
1
PIA
J2
P2
LOGIC A
48
B14
LOGIC P-IA
LOGIC B
49
E15
LOGIC P-IB
LOGIC C
50
E25
P-IC
TURBULENCE MODE
40
C7
TRB
DISPLAY
V-BAR ROLL COMMAND RATE (G2)
33
R74 5110
V-BAR ROLL POSITION (XMTR X)
30
R73 2150
J6
CONVERTER MODULE INPUT TB3-F
H
C7 3.4UF
Q19
Q20 2N2907
CR36
CR37
R64 5600
R65 5600
POSITION Z
E17
D16
C8 4.7UF
R66 8250
R67 90.9K
Q21 2N956
Q22 2N956
R68 2700
C9 4.7UF
R69 2150
C10 4.7UF
R63 4200
CR38
CR39
CR40
CR41
R70 8250
C11 4.7UF
C12 4.7UF
Q23
C19 4.7UF
R71 4700
C13 1UF
R72 10K
R75 10K
R76 90.9K
Q24 2N956
Q25 2N956
R77 68.1
R78 2700
Q26
C20 120
R79 1550
R80 1K
C14 4.7UF
R81 1K
Q27 2N3913
R82 5110
CR42
C15 1.5UF
A3
Q28 2N3913
R83 5110
CR43
C16 1.5UF
0 AMP IN
0 AMP INPUT
E13
SERVO AMPL INPUT TB1-F
BB
J4
T3
RED
BRN
BLU
GRN
YEL
BLK
(10)
26VAC COMMAND
R84 3300
+28VDC COMMAND CONVERTER
OFF MODE+
41
CR91
CR92
CONVERTER TB2-C
4
TB2-B-6
3
TB2-B-4
2
TB2-F-3
C3
19
R3 10K
COURSE DATUM SYNCHRO H'
17
R2 14.7K
C2
18
R1 31.6K
PIB
24
(SEE TB1-C SCHEMATIC)
COURSE DATUM INPUT
C2
14
R59 31.6K
HEADING ERROR SYNCHRO H'
13
R60 14.7K
C3
15
R61 10K
HEADING ERROR SYNCHRO C'
23
(SEE TB3-D SCHEMATIC)
HEADING INPUT

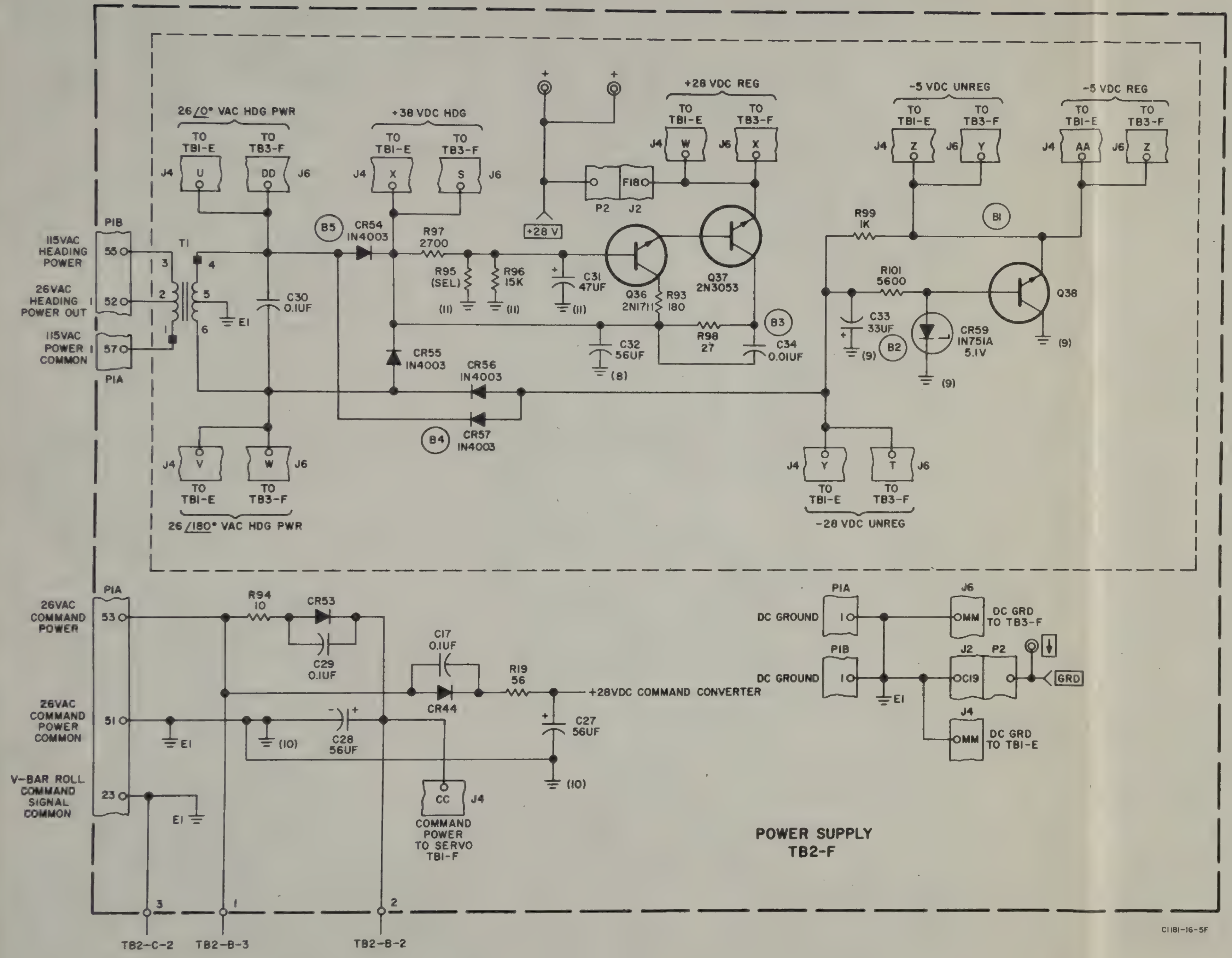
562R-1 Roll Steering Computer, Schematic Diagram TB2 (Sheet 4 of 7)
Figure 807


TB2-B-1
1
SERVO
AMPL
INPUT TBI-F
BB
J4
O AMP
IN
O AMP
INPUT
P2
J2
OE13
C16
1.5UF
R76
90.9K
C14
4.7UF
R81
IK
Q27
2N3913
Q28
2N3913
R63
4200
CR39
Q25
2N956
R77
68.1
C11
4.7UF
C12
4.7UF
R79
1550
R80
IK
C15
1.5UF
A3
Q26
CR41
R75
10K
Q24
2N956
R82
5110
R83
5110
CR42
RED
CR43
R78
2700
BRN
BLU
Q23
T3
GRN
YEL
(10)
C13
IUF
BLK
C19
4.7UF
R71
4700
R72
10K
26VAC
COMMAND
R84
3300
C20
120
CR91
CR92
3
2
TB2-B-4
TB2-F-3
IA
4
R59
31.6K
3
R60
14.7K
5
R61
10K
IB
3
HEMATIC)
NPUT

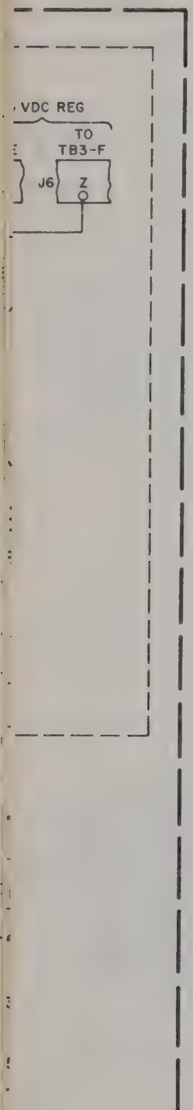

+28 VDC REG
-5 VDC UNREG
26 /0° VAC HDG PWR
+38 VDC HDG
TO TBI-E
TO TB3-F
J4
J6
U
DD
X
S
W
Z
Y
AA
+28 V
P2
J2
FI8
PIB
PIA
TI
115VAC HEADING POWER
26VAC HEADING POWER OUT
115VAC POWER COMMON
55
52
57
B5
CR54 IN4003
R97 2700
R95 (SEL)
R96 15K
C31 47UF
Q36 2N1711
Q37 2N3053
R93 180
R98 27
C34 0.01UF
C32 56UF
C30 0.1UF
E1
CR55 IN4003
CR56 IN4003
CR57 IN4003
B4
B3
B1
B2
R99 1K
R101 5600
Q38
C33 33UF
CR59 IN751A 5.1V
V
W
T
26 /180° VAC HDG PWR
-28 VDC UNREG
26VAC COMMAND POWER
53
R94 10
CR53
C29 0.1UF
C17 0.1UF
CR44
R19 56
+28VDC COMMAND CONVERTER
26VAC COMMAND POWER COMMON
51
C28 56UF
C27 56UF
V-BAR ROLL COMMAND SIGNAL COMMON
23
CC
COMMAND POWER TO SERVO TBI-F
DC GROUND
DC GRD TO TB3-F
MM
C19
GRD
DC GRD TO TBI-E
POWER SUPPLY TB2-F
TB2-C-2
TB2-B-3
TB2-B-2

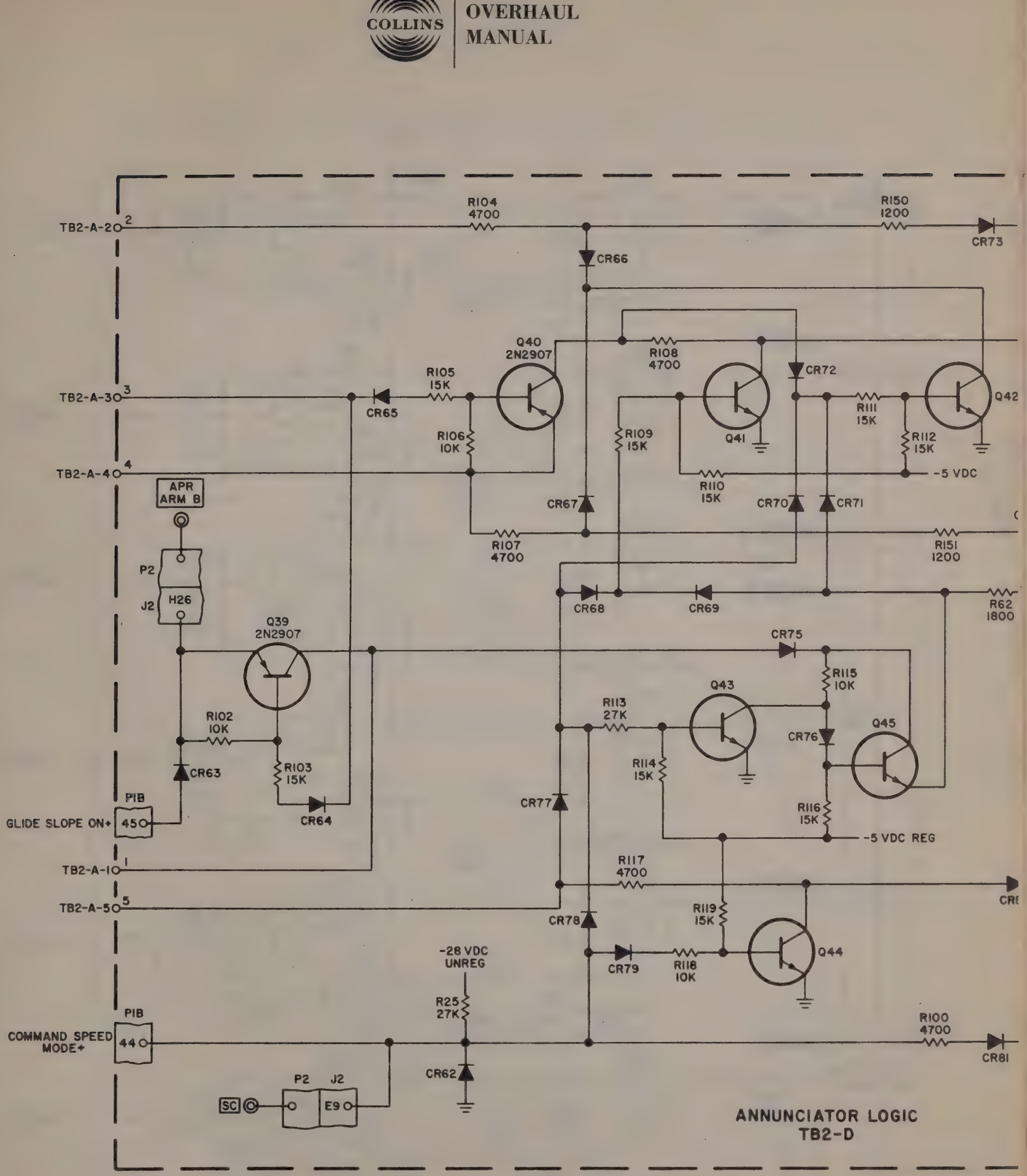
562R-1 Roll Steering Computer, Schematic Diagram TB2 (Sheet 5 of 7)
Figure 807


TB2-B-1
1
SERVO AMPL INPUT TB1-F
BB
J4
0 AMP IN
0 AMP INPUT
P2
J2
E13
C16 1.5UF
R76 90.9K
C14 4.7UF
R81 1K
Q27 2N3913
Q28 2N3913
R63 4200
Q25 2N956
R77 68.1
CR39
C11 4.7UF
C12 4.7UF
R79 1550
R80 1K
C15 1.5UF
A3
R82 5110
R83 5110
CR41
Q26
R75 10K
Q24 2N956
CR42
RED
CR43
Q23
R78 2700
BRN
BLU
T3
GRN
YEL
C13 1UF
BLK
(10)
C19 4.7UF
R71 4700
R72 10K
26VAC COMMAND
R84 3300
C20 120
CR91
CR92
3
2
TB2-B-4
TB2-F-3
1A
R59 31.6K
4
R60 14.7K
3
R61 10K
5
1B
3
HEMATIC)
NPUT

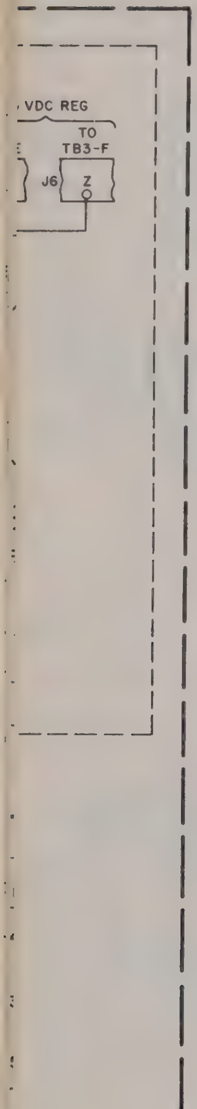

26/0° VAC HDG PWR
TO TB1-E
TO TB3-F
J4
U
DD
J6
+38 VDC HDG
TO TB1-E
TO TB3-F
J4
X
S
J6
+
+
+28 VDC REG
TO TB1-E
TO TB3-F
J4
W
J6
X
-5 VDC UNREG
TO TB1-E
TO TB3-F
J4
Z
J6
Y
-5 VDC REG
TO TB1-E
TO TB3-F
J4
AA
J6
Z
P1B
115VAC HEADING POWER
55
T1
3
4
2
5
26VAC HEADING POWER OUT
1
52
E1
6
1
115VAC POWER COMMON
1
57
P1A
C30
0.1UF
B5
CR54
1N4003
R97
2700
R95
(SEL)
(11)
R96
15K
(11)
+
C31
47UF
(11)
P2
F18
J2
+28 V
Q36
2N1711
R93
180
Q37
2N3053
R98
27
B3
C34
0.01UF
C32
56UF
(8)
CR55
1N4003
CR56
1N4003
CR57
1N4003
B4
R99
1K
B1
R101
5600
Q38
(9)
C33
33UF
+
(9)
B2
CR59
1N751A
5.1V
(9)
J4
V
W
J6
TO TB1-E
TO TB3-F
26/180° VAC HDG PWR
J4
Y
T
J6
TO TB1-E
TO TB3-F
-28 VDC UNREG
P1A
26VAC COMMAND POWER
53
R94
10
CR53
C29
0.1UF
C17
0.1UF
R19
56
+28VDC COMMAND CONVERTER
CR44
26VAC COMMAND POWER COMMON
51
E1
(10)
-
+
C28
56UF
+
C27
56UF
(10)
V-BAR ROLL COMMAND SIGNAL COMMON
23
E1
CC
J4
COMMAND POWER TO SERVO TB1-F
P1A
J6
DC GROUND
1
MM
DC GRD TO TB3-F
P1B
J2
P2
DC GROUND
1
C19
GRD
E1
J4
MM
DC GRD TO TB1-E
POWER SUPPLY TB2-F
3
1
2
TB2-C-2
TB2-B-3
TB2-B-2
C1181-16-5F

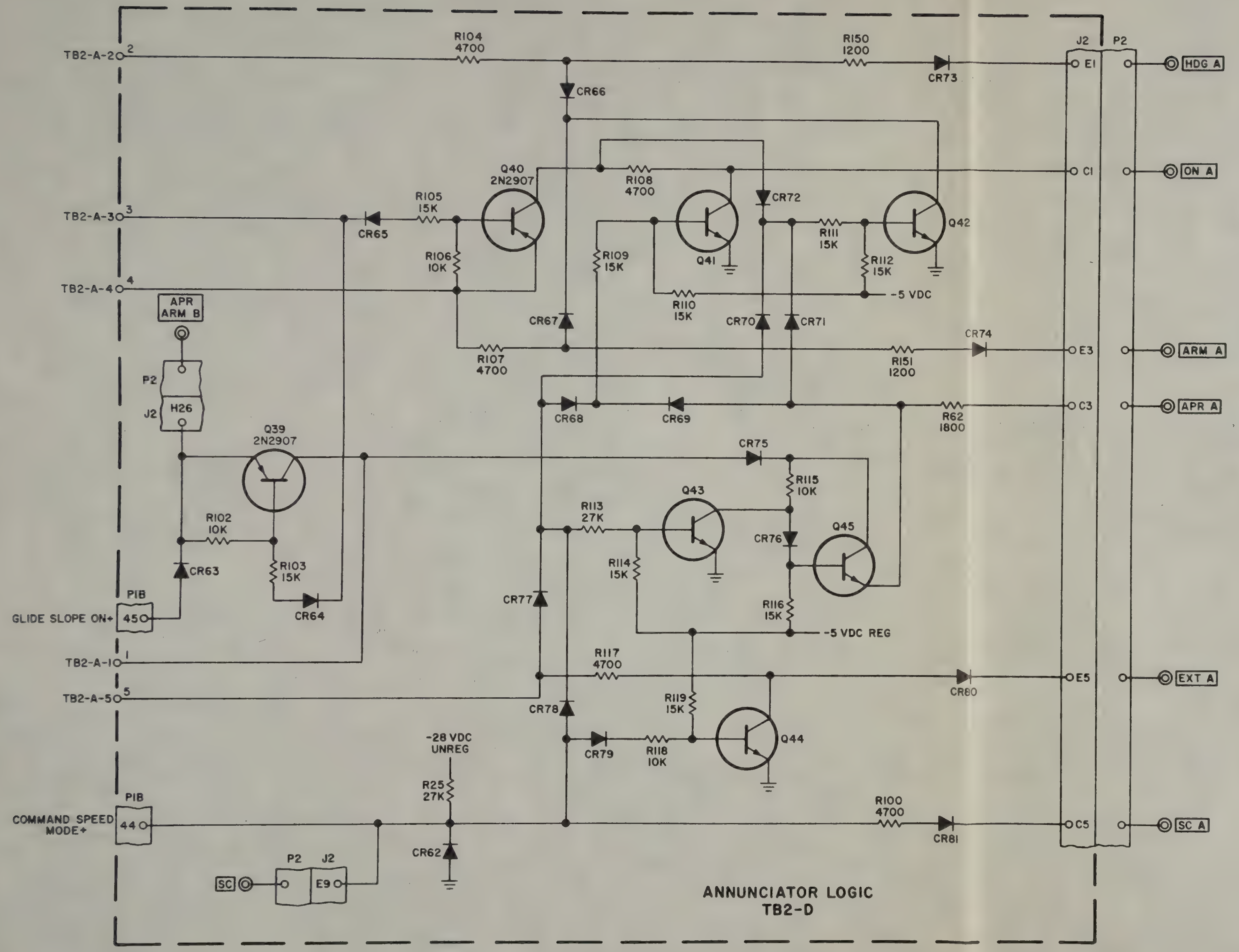
562R-1 Roll Steering Computer, Schematic Diagram TB2 (Sheet 5 of 7)
Figure 807


VDC REG
TO
TB3-F
E
J6
Z
C1181-16-5F

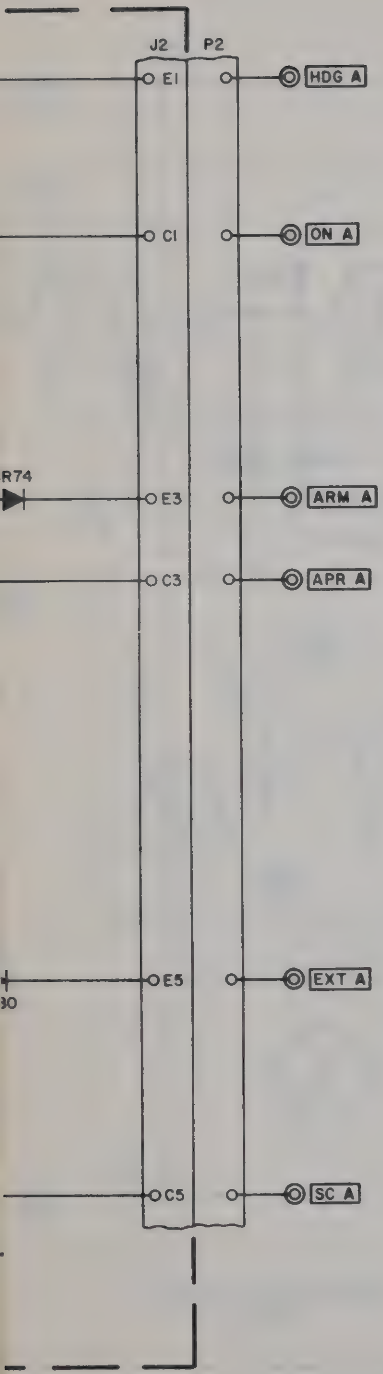

TB2-A-2
R104
4700
R150
1200
CR73
CR66
Q40
2N2907
R108
4700
CR72
R105
15K
TB2-A-3
CR65
R106
10K
R109
15K
Q41
R111
15K
R112
15K
Q42
TB2-A-4
R110
15K
-5 VDC
APR
ARM B
CR67
CR70
CR71
P2
R107
4700
R151
1200
J2
H26
CR68
CR69
R62
1800
Q39
2N2907
CR75
R115
10K
Q43
R113
27K
Q45
R102
10K
CR76
R114
15K
R103
15K
CR63
CR77
R116
15K
P1B
GLIDE SLOPE ON+
45
CR64
-5 VDC REG
TB2-A-1
R117
4700
TB2-A-5
CR78
R119
15K
CR
-28 VDC
UNREG
CR79
R118
10K
Q44
R25
27K
P1B
R100
4700
COMMAND SPEED
MODE+
44
CR81
CR62
P2
J2
SC
E9
ANNUNCIATOR LOGIC
TB2-D

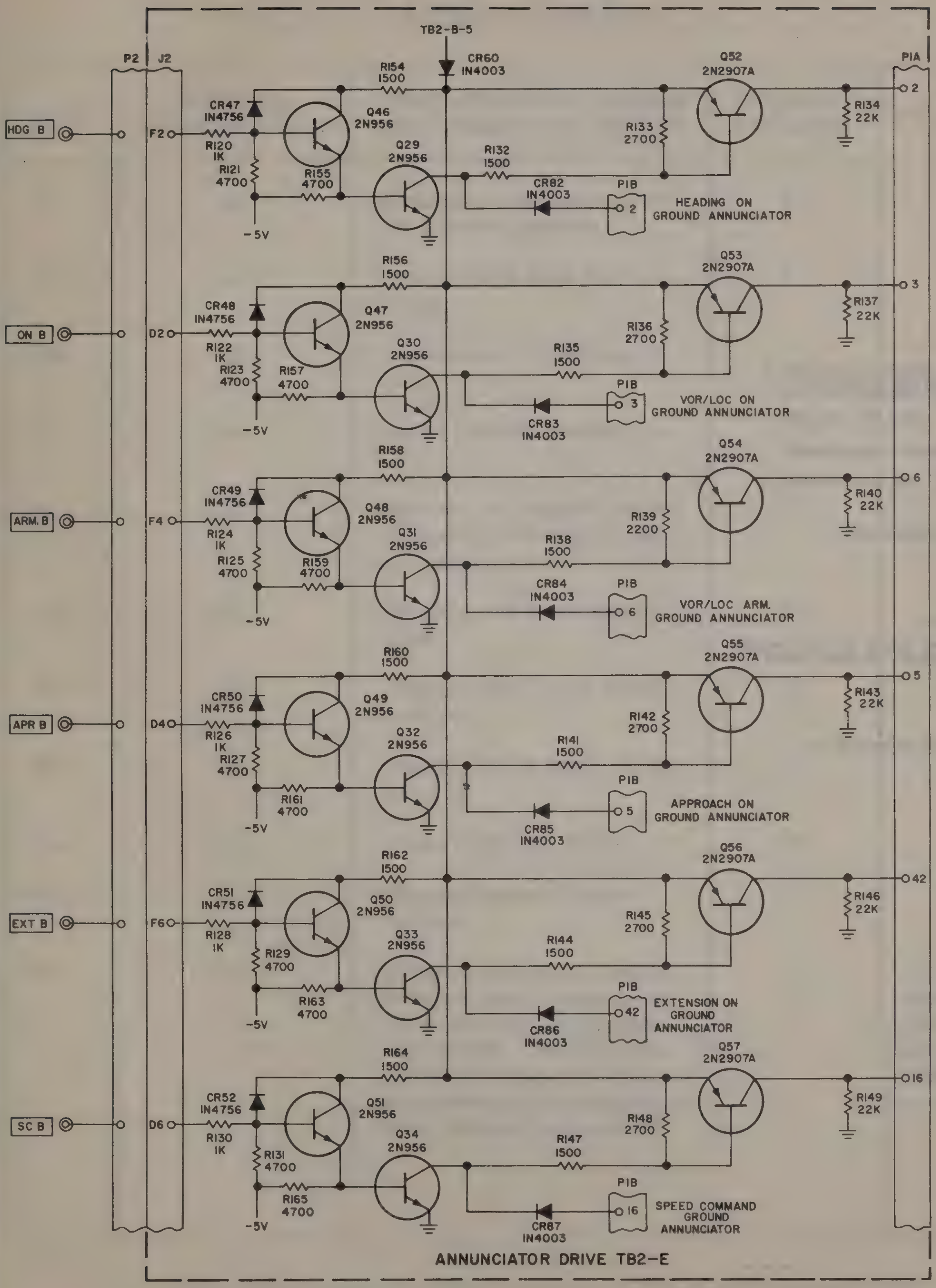
562R-1 Roll Steering Computer, Schematic Diagram TB2 (Sheet 6 of 7)
Figure 807


VDC REG
TO
TB3-F
J6
Z
C1181-16-5F

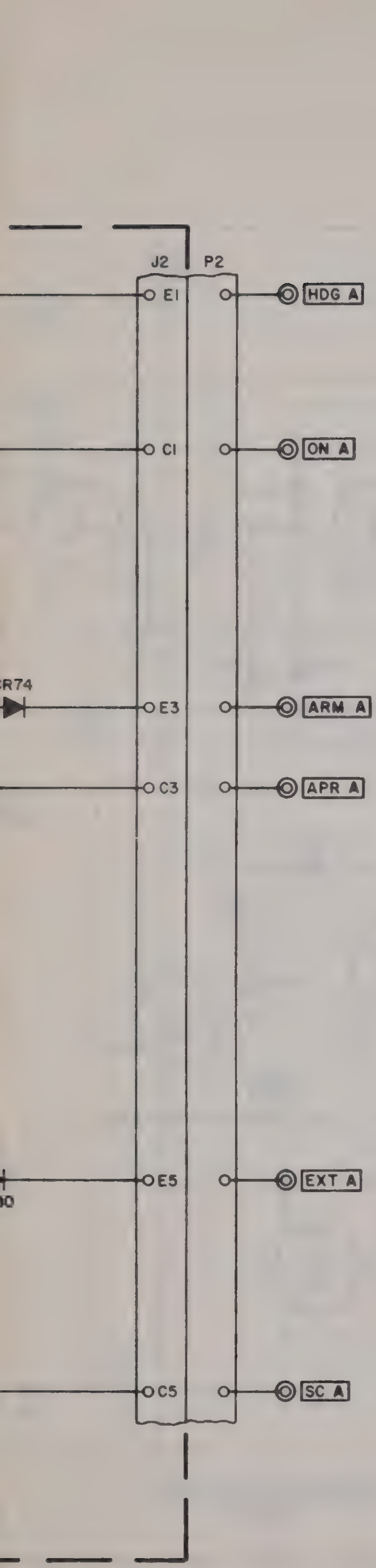

TB2-A-2
2
R104
4700
R150
1200
CR73
J2
P2
E1
HDG A
CR66
Q40
2N2907
R108
4700
C1
ON A
CR72
TB2-A-3
3
R105
15K
CR65
R106
10K
R109
15K
Q41
R111
15K
Q42
R112
15K
-5 VDC
R110
15K
TB2-A-4
4
APR
ARM B
CR67
CR70
CR71
CR74
R107
4700
R151
1200
E3
ARM A
P2
J2
H26
CR68
CR69
R62
1800
C3
APR A
Q39
2N2907
CR75
R115
10K
Q43
R113
27K
R102
10K
CR76
Q45
R114
15K
R103
15K
CR63
CR77
R116
15K
P1B
GLIDE SLOPE ON+
45
CR64
-5 VDC REG
TB2-A-1
1
R117
4700
E5
EXT A
TB2-A-5
5
CR80
R119
15K
CR78
Q44
-28 VDC
UNREG
CR79
R118
10K
R25
27K
P1B
COMMAND SPEED
MODE+
44
R100
4700
CR81
C5
SC A
CR62
SC
P2
J2
E9
ANNUNCIATOR LOGIC
TB2-D

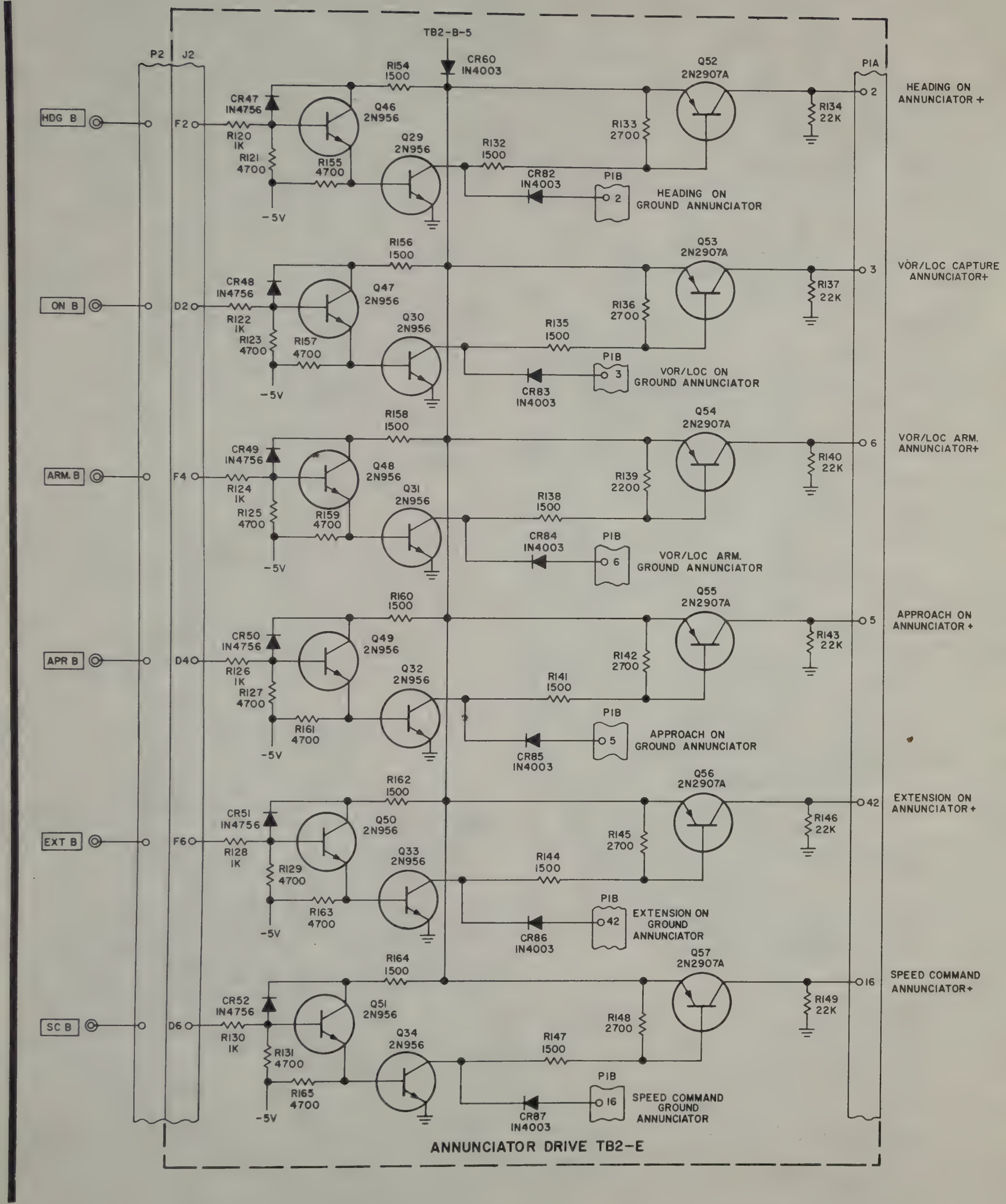
562R-1 Roll Steering Computer, Schematic Diagram TB2 (Sheet 6 of 7)
Figure 807


J2
P2
E1
HDG A
C1
ON A
R74
E3
ARM A
C3
APR A
E5
30
EXT A
C5
SC A


TB2-B-5
CR60 IN4003
P2
J2
P1A
HDG B
F2
CR47 IN4756
R120 1K
R121 4700
Q46 2N956
R155 4700
Q29 2N956
R154 1500
R132 1500
CR82 IN4003
P1B
R133 2700
Q52 2N2907A
R134 22K
HEADING ON ANNUNCIATOR +
HEADING ON GROUND ANNUNCIATOR
-5V
ON B
D2
CR48 IN4756
R122 1K
R123 4700
Q47 2N956
R157 4700
Q30 2N956
R156 1500
R135 1500
CR83 IN4003
R136 2700
Q53 2N2907A
R137 22K
VOR/LOC CAPTURE ANNUNCIATOR+
VOR/LOC ON GROUND ANNUNCIATOR
ARM. B
F4
CR49 IN4756
R124 1K
R125 4700
Q48 2N956
R159 4700
Q31 2N956
R158 1500
R138 1500
CR84 IN4003
R139 2200
Q54 2N2907A
R140 22K
VOR/LOC ARM. ANNUNCIATOR+
VOR/LOC ARM. GROUND ANNUNCIATOR
APR B
D4
CR50 IN4756
R126 1K
R127 4700
Q49 2N956
R161 4700
Q32 2N956
R160 1500
R141 1500
CR85 IN4003
R142 2700
Q55 2N2907A
R143 22K
APPROACH ON ANNUNCIATOR +
APPROACH ON GROUND ANNUNCIATOR
EXT B
F6
CR51 IN4756
R128 1K
R129 4700
Q50 2N956
R163 4700
Q33 2N956
R162 1500
R144 1500
CR86 IN4003
R145 2700
Q56 2N2907A
R146 22K
EXTENSION ON ANNUNCIATOR +
EXTENSION ON GROUND ANNUNCIATOR
SC B
D6
CR52 IN4756
R130 1K
R131 4700
Q51 2N956
R165 4700
Q34 2N956
R164 1500
R147 1500
CR87 IN4003
R148 2700
Q57 2N2907A
R149 22K
SPEED COMMAND ANNUNCIATOR+
SPEED COMMAND GROUND ANNUNCIATOR
2
3
6
5
42
16
ANNUNCIATOR DRIVE TB2-E

562R-1 Roll Steering Computer, Schematic Diagram TB2 (Sheet 7 of 7)
Figure 807


J2
P2
E1
HDG A
C1
ON A
R74
E3
ARM A
C3
APR A
E5
EXT A
C5
SC A


TB2-B-5
CR60
IN4003
P2
J2
PIA
HDG B
F2
CR47
IN4756
R120
1K
R121
4700
Q46
2N956
R154
1500
R155
4700
Q29
2N956
-5V
R132
1500
CR82
IN4003
PIB
2
HEADING ON GROUND ANNUNCIATOR
Q52
2N2907A
R133
2700
R134
22K
2
HEADING ON ANNUNCIATOR +
ON B
D2
CR48
IN4756
R122
1K
R123
4700
Q47
2N956
R156
1500
R157
4700
Q30
2N956
-5V
R135
1500
CR83
IN4003
PIB
3
VOR/LOC ON GROUND ANNUNCIATOR
Q53
2N2907A
R136
2700
R137
22K
3
VOR/LOC CAPTURE ANNUNCIATOR+
ARM. B
F4
CR49
IN4756
R124
1K
R125
4700
Q48
2N956
R158
1500
R159
4700
Q31
2N956
-5V
R138
1500
CR84
IN4003
PIB
6
VOR/LOC ARM. GROUND ANNUNCIATOR
Q54
2N2907A
R139
2200
R140
22K
6
VOR/LOC ARM. ANNUNCIATOR+
APR B
D4
CR50
IN4756
R126
1K
R127
4700
Q49
2N956
R160
1500
R161
4700
Q32
2N956
-5V
R141
1500
CR85
IN4003
PIB
5
APPROACH ON GROUND ANNUNCIATOR
Q55
2N2907A
R142
2700
R143
22K
5
APPROACH ON ANNUNCIATOR +
EXT B
F6
CR51
IN4756
R128
1K
R129
4700
Q50
2N956
R162
1500
R163
4700
Q33
2N956
-5V
R144
1500
CR86
IN4003
PIB
42
EXTENSION ON GROUND ANNUNCIATOR
Q56
2N2907A
R145
2700
R146
22K
42
EXTENSION ON ANNUNCIATOR +
SC B
D6
CR52
IN4756
R130
1K
R131
4700
Q51
2N956
R164
1500
R165
4700
Q34
2N956
-5V
R147
1500
CR87
IN4003
PIB
16
SPEED COMMAND GROUND ANNUNCIATOR
Q57
2N2907A
R148
2700
R149
22K
16
SPEED COMMAND ANNUNCIATOR+
ANNUNCIATOR DRIVE TB2-E

NOTES:

① UNLESS OTHERWISE INDICATED, ALL RESISTANCE VALUES ARE IN OHMS, AND ALL CAPACITANCE VALUES ARE IN PICOFARADS.

② UNLESS OTHERWISE INDICATED, ALL TRANSISTORS ARE TYPE 2N718A.

③ UNLESS OTHERWISE INDICATED, ALL DIODES ARE TYPE IN645.

④ DENOTES A TERMINAL IN LOGIC MODULE
DENOTES A TEST POINT IN LOGIC MODULE
J2 P2

⑤ NUMBERS IN ( ) INDICATE SIGNAL GROUND CIRCUITS.
MODE GENERATOR-(6)
MONITOR-(6)
ANNUNCIATOR LOGIC-(6)
ANNUNCIATOR DRIVE-(5)
CONVERTER, EXCEPT T3-YEL-(7)
POWER SUPPLY-(AS INDICATED)
ALL SIGNAL GROUNDS ARE TIED TO EI.

⑥ EI E4 CHASSIS GROUND
EI=MASTER GROUND CIRCUITS (ON REAR CHASSIS)
E2=REDUNTANT GROUND (ON REAR CHASSIS)

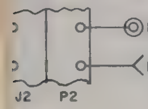
⑦ ABBREVIATIONS:
LOC=LOCALIZER
HDG=HEADING

⑧ (AI) INDICATES LOCATION OF CHANGE DESCRIBED IN THE REVISION TABLE.

C181-16-5E

562R-1 Roll Steering Computer, Schematic Diagram TB2 (Sheet 7 of 7)
Figure 807

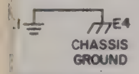
NLESS OTHERWISE INDICATED, ALL RESISTANCE VALUES ARE IN HMS, AND ALL CAPACITANCE VALUES ARE IN PICOFARADS.
NLESS OTHERWISE INDICATED, ALL TRANSISTORS ARE TYPE N718A.
NLESS OTHERWISE INDICATED, ALL DIODES ARE TYPE IN645.



◎ DENOTES A TERMINAL IN LOGIC MODULE

< DENOTES A TEST POINT IN LOGIC MODULE

UMBERS IN ( ) INDICATE SIGNAL GROUND CIRCUITS.
ODE GENERATOR-(6)
ONITOR-(6)
NNUNCIATOR LOGIC-(6)
NNUNCIATOR DRIVE-(5)
ONVERTER, EXCEPT T3-YEL-(7)
OWER SUPPLY-(AS INDICATED)
LL SIGNAL GROUNDS ARE TIED TO EI.



EI=MASTER GROUND CIRCUITS (ON REAR CHASSIS)
E2=REDUNTANT GROUND (ON REAR CHASSIS)

BBREVIATIONS:
OC=LOCALIZER
OG=HEADING

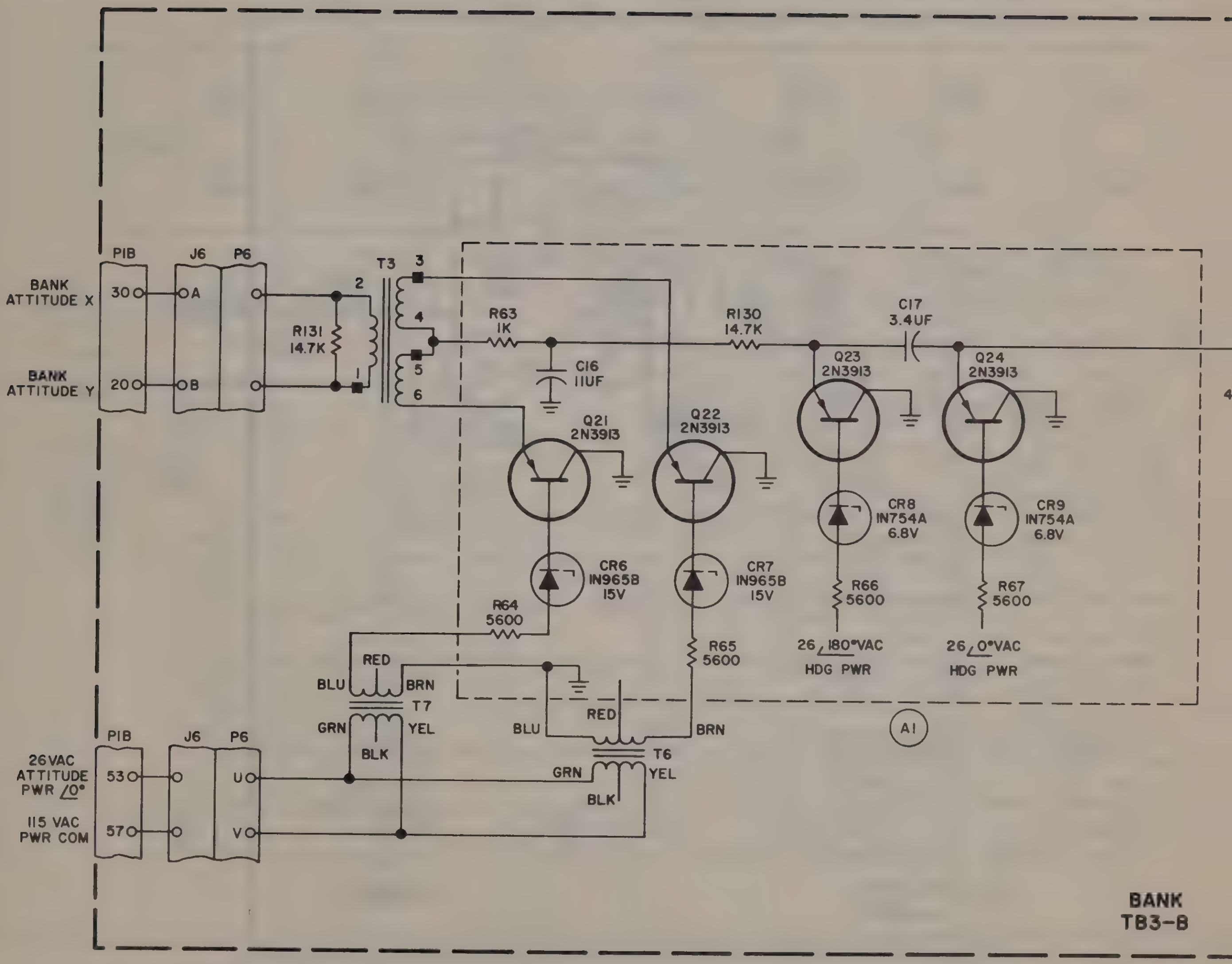
A1 INDICATES LOCATION OF CHANGE DESCRIBED IN THE REVISION TABLE.

C1181-16-5E

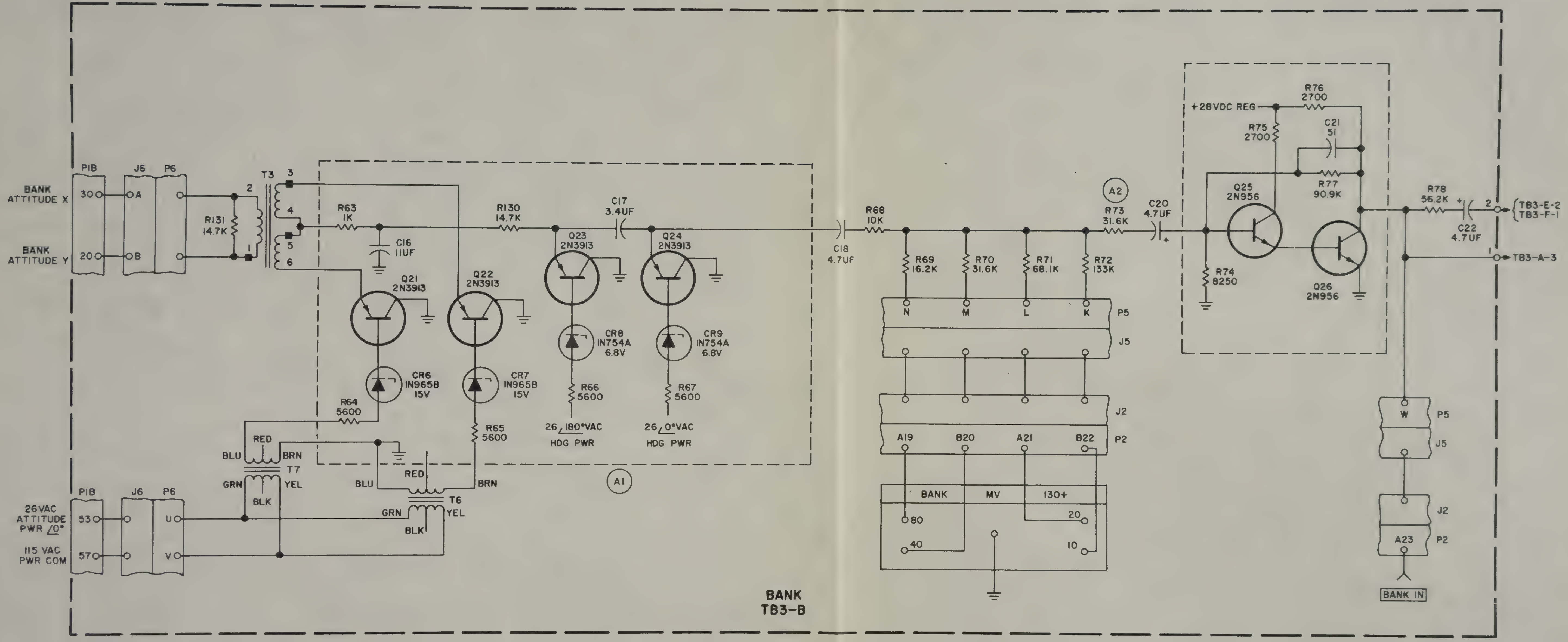
SCHEMATIC REVISIONS

PAGE	REVISION IDENTIFICATION	DESCRIPTION OF REVISION AND REASON FOR CHANGE	SERVICE BULLETIN	EFFECTIVITY
847	A1	Reworked phase converter for greater linearity.	6	All
847	A2	Changed R73 from 23.7K to 27.4K.	6	All
851	A3	Added polarity marking to C10.		All
851	A4	Added polarity marking to C4.		
851	A5	Reduced the standoff caused by leakage currents in the low-pass section.	5	All
855	A6	Changed R97 from 100K to 150K.	6	All
855	A7	Changed R120 from 38.3K to 34.8K.	6	All
855	A8	Changed R102, R105, R108, and R11.	6	All
855	A9	Added CR27 and CR28.	6	All
857	A10	Changed phase selector network.	6	All
851	B1	Changed routing of complementary filter output from P6-R and J4-T to P5-MM and P3-MM. This modification is to improve system performance when operating from multiple ac sources.	15	Installed in all units at Collins bearing SN482 and above. Applicable to all units.

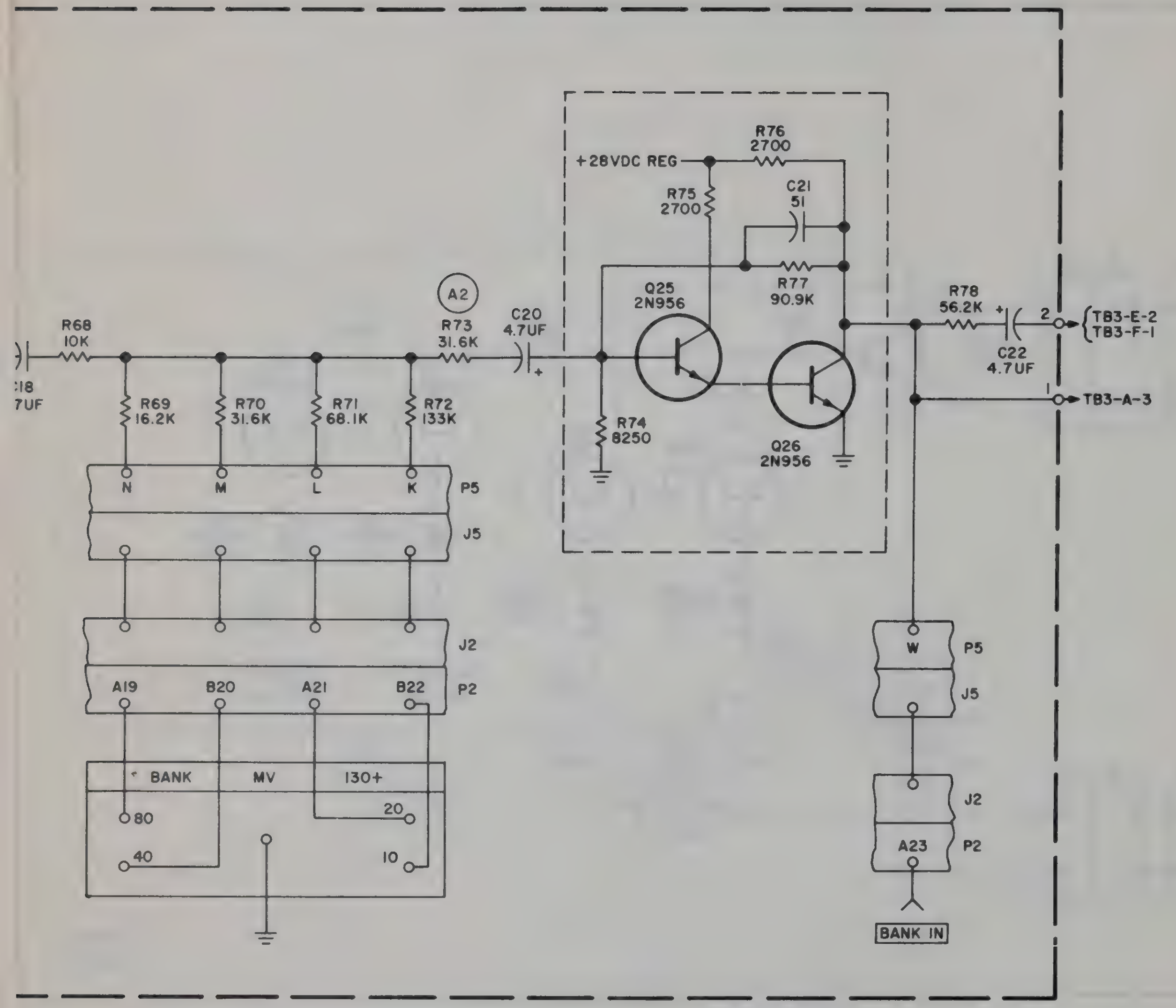
562R-1 Roll Steering Computer, Schematic Diagram TB3 (Sheet 1 of 7)
Figure 808

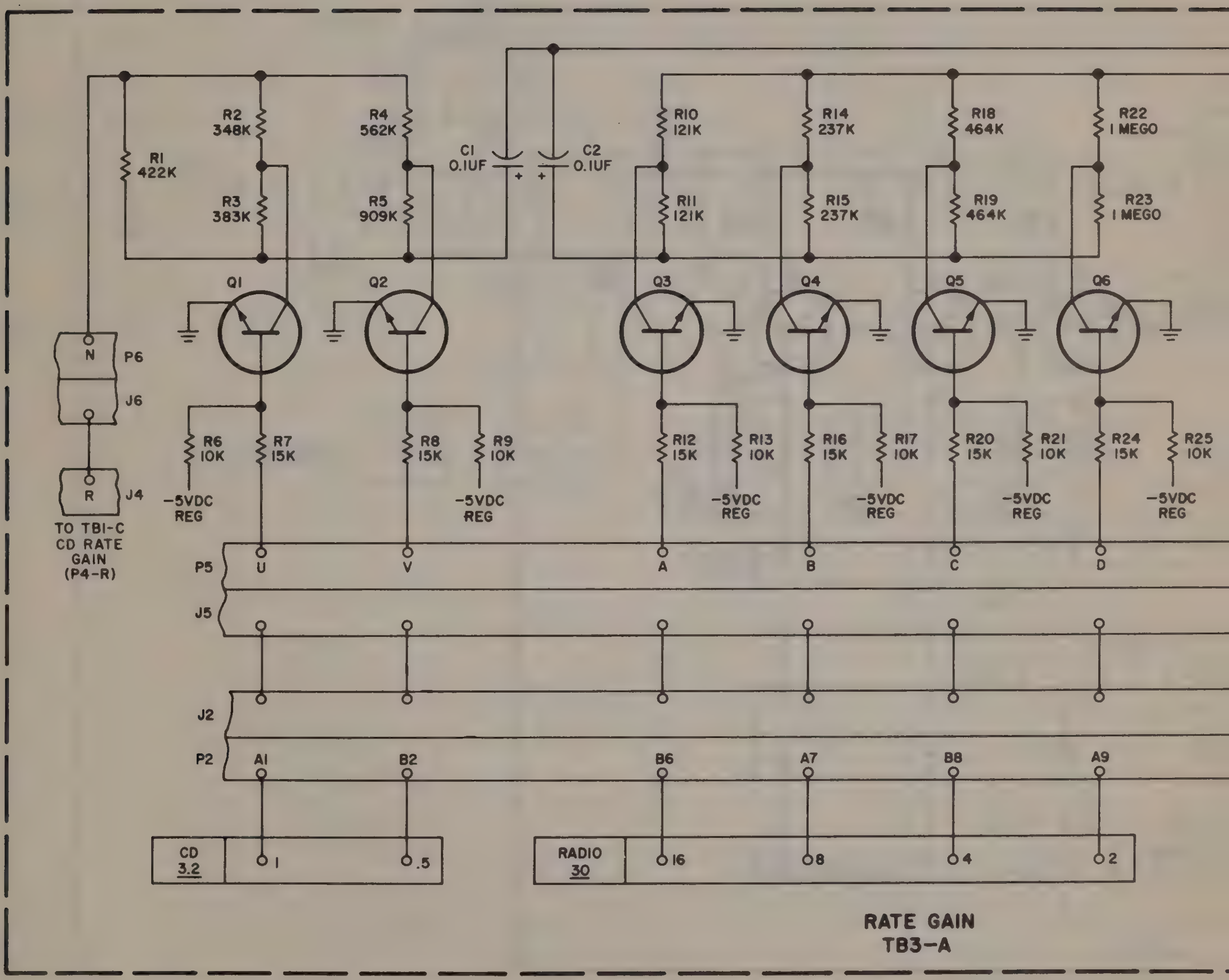

PIB
J6
P6
BANK ATTITUDE X
30
A
BANK ATTITUDE Y
20
B
T3
2
3
4
5
6
1
R131 14.7K
R63 1K
C16 11UF
R130 14.7K
C17 3.4UF
Q21 2N3913
Q22 2N3913
Q23 2N3913
Q24 2N3913
CR6 IN965B 15V
CR7 IN965B 15V
CR8 IN754A 6.8V
CR9 IN754A 6.8V
R64 5600
R65 5600
R66 5600
R67 5600
26 /180° VAC HDG PWR
26 /0° VAC HDG PWR
RED
BLU
BRN
T7
GRN
YEL
BLK
T6
A1
26VAC ATTITUDE PWR /0°
115 VAC PWR COM
53
57
U
V
BANK TB3-B

562R-1 Roll Steering Computer, Schematic Diagram TB3 (Sheet 2 of 7)
Figure 808

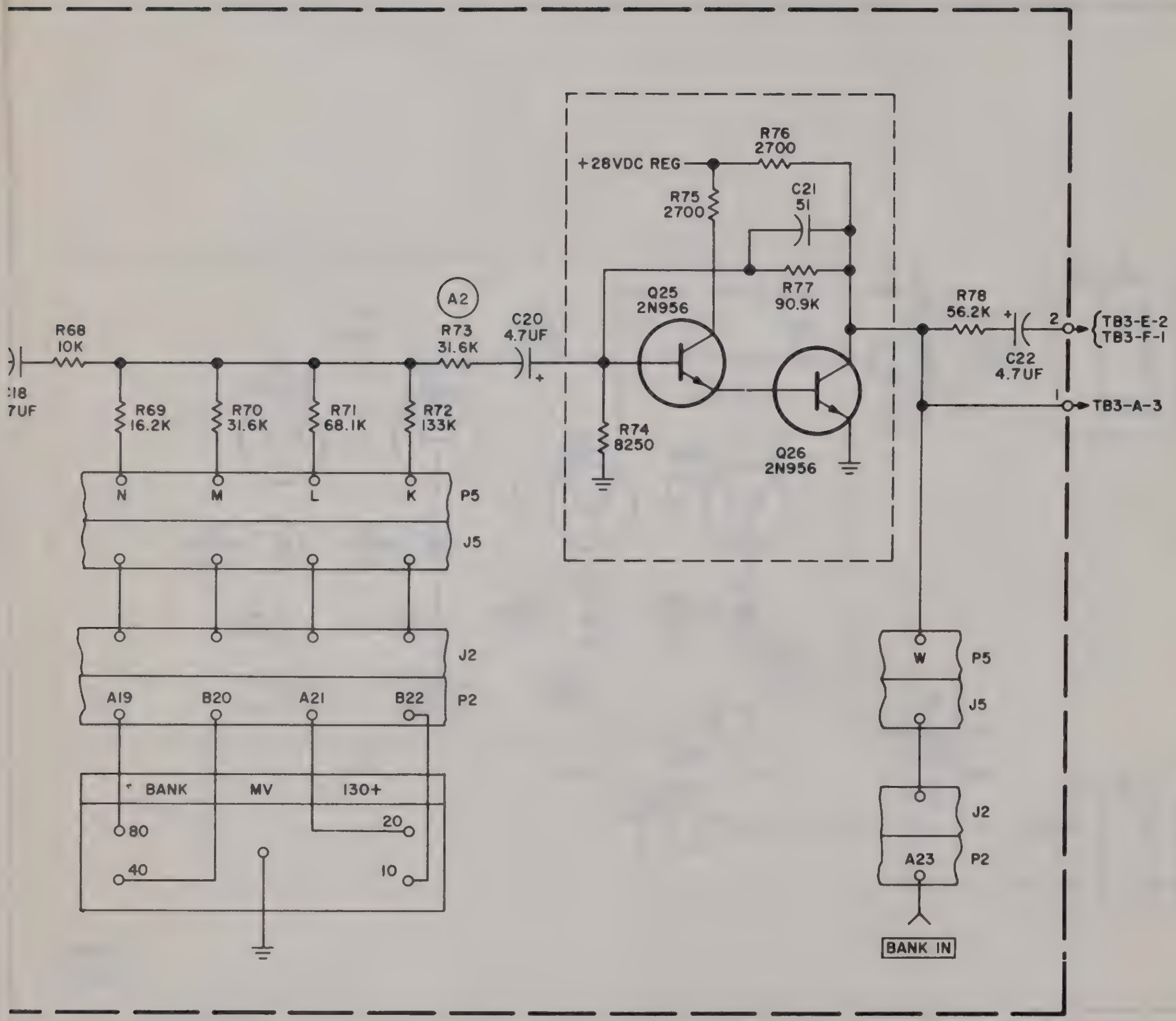

BANK ATTITUDE X
BANK ATTITUDE Y
PIB
J6
P6
30
20
A
B
R131 14.7K
T3
2
3
4
5
6
1
R63 1K
C16 11UF
Q21 2N3913
Q22 2N3913
R130 14.7K
C17 3.4UF
Q23 2N3913
Q24 2N3913
CR6 IN965B 15V
CR7 IN965B 15V
CR8 IN754A 6.8V
CR9 IN754A 6.8V
R64 5600
R65 5600
R66 5600
R67 5600
26 ∠180°VAC HDG PWR
26 ∠0°VAC HDG PWR
RED
BLU
BRN
GRN
YEL
BLK
T7
T6
A1
26VAC ATTITUDE PWR ∠0°
115 VAC PWR COM
53
57
U
V
C18 4.7UF
R68 10K
R69 16.2K
R70 31.6K
R71 68.1K
R72 133K
N
M
L
K
P5
J5
J2
P2
A19
B20
A21
B22
BANK
MV
130+
80
40
20
10
A2
R73 31.6K
C20 4.7UF
+28VDC REG
R75 2700
R76 2700
C21 51
R77 90.9K
Q25 2N956
Q26 2N956
R74 8250
R78 56.2K
C22 4.7UF
TB3-E-2
TB3-F-1
TB3-A-3
W
A23
BANK IN
BANK TB3-B

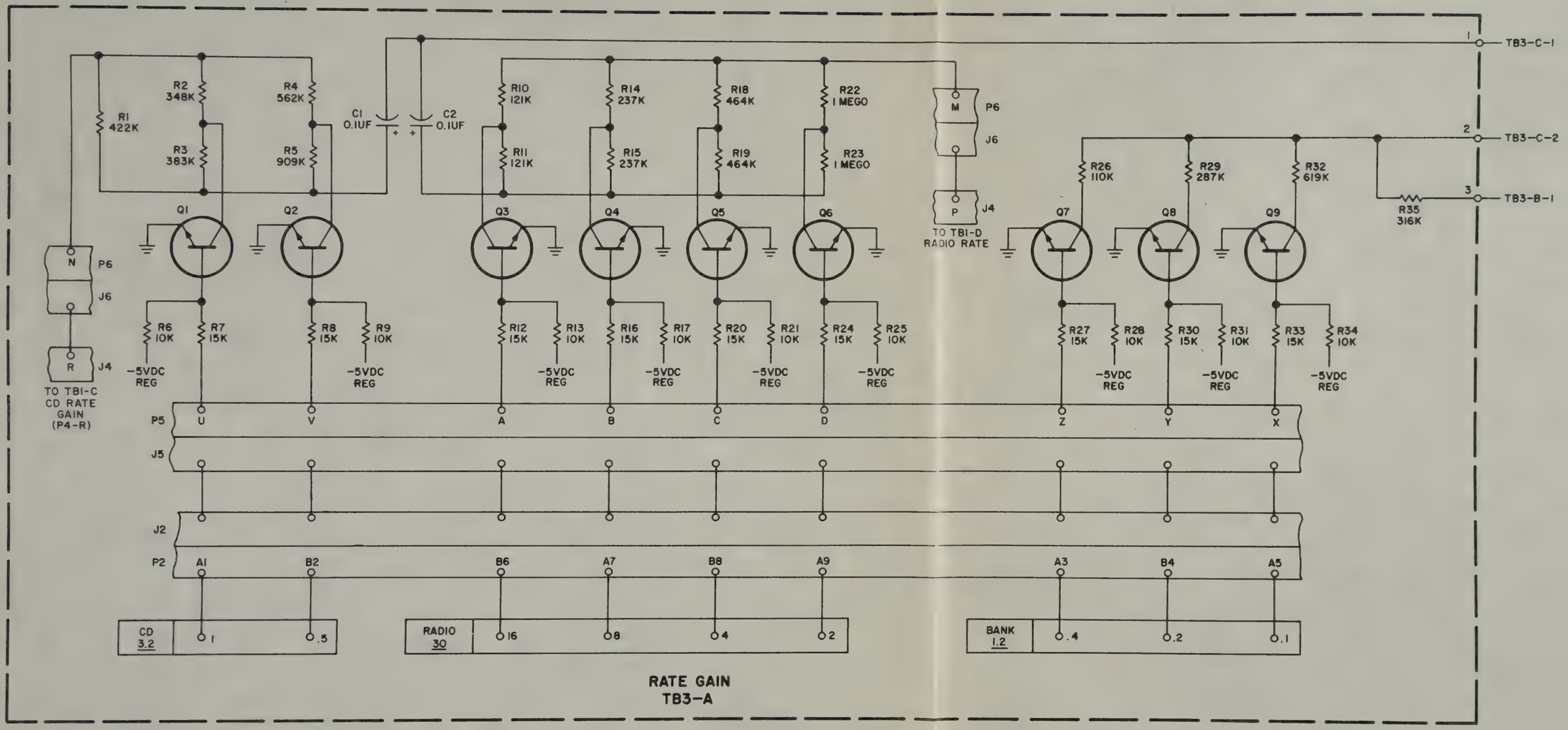
562R-1 Roll Steering Computer, Schematic Diagram TB3 (Sheet 2 of 7)
Figure 808


R68
10K
:18
7UF
R69
16.2K
R70
31.6K
R71
68.1K
R72
133K
A2
R73
31.6K
C20
4.7UF
+
N
M
L
K
P5
J5
J2
P2
A19
B20
A21
B22
BANK
MV
130+
80
40
20
10
+28VDC REG
R76
2700
R75
2700
C21
51
R77
90.9K
Q25
2N956
Q26
2N956
R74
8250
R78
56.2K
+
C22
4.7UF
2
1
TB3-E-2
TB3-F-1
TB3-A-3
W
P5
J5
J2
A23
P2
BANK IN

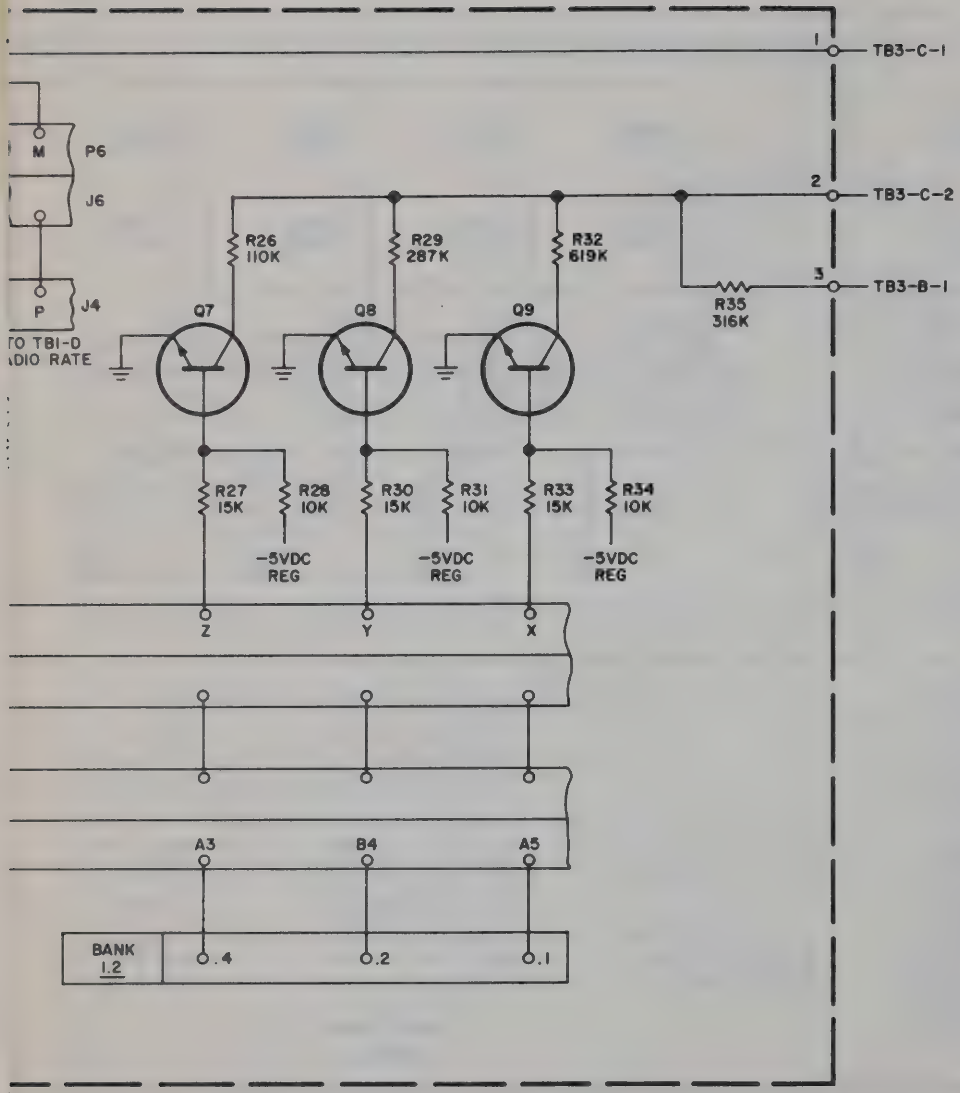

R1
422K
R2
348K
R3
383K
R4
562K
R5
909K
C1
0.1UF
C2
0.1UF
R10
121K
R11
121K
R14
237K
R15
237K
R18
464K
R19
464K
R22
1 MEGO
R23
1 MEGO
Q1
Q2
Q3
Q4
Q5
Q6
N
P6
J6
R
J4
TO TB1-C
CD RATE
GAIN
(P4-R)
R6
10K
R7
15K
R8
15K
R9
10K
R12
15K
R13
10K
R16
15K
R17
10K
R20
15K
R21
10K
R24
15K
R25
10K
-5VDC
REG
P5
U
V
A
B
C
D
J5
J2
P2
A1
B2
B6
A7
B8
A9
CD
3.2
1
.5
RADIO
30
16
8
4
2
RATE GAIN
TB3-A

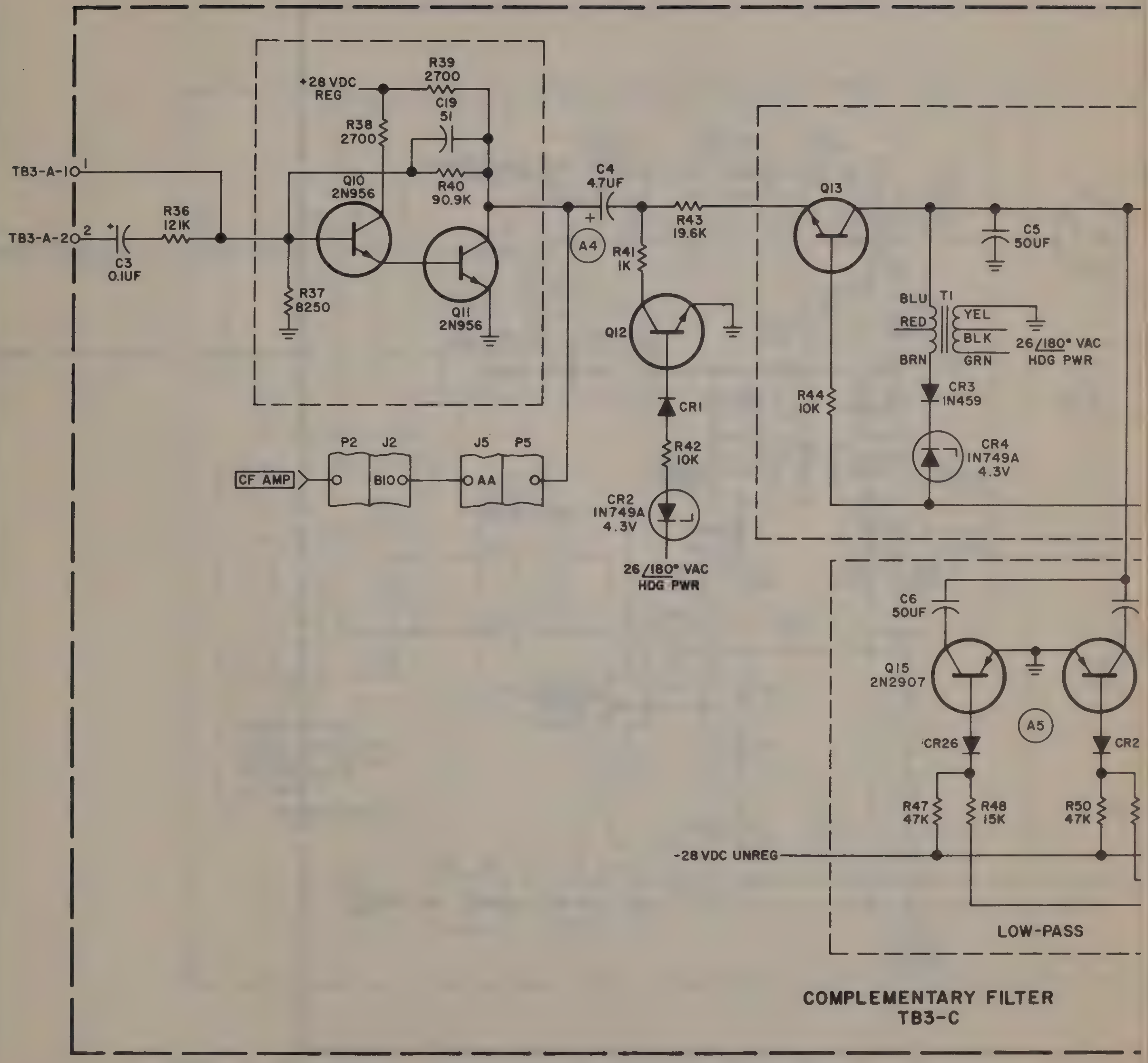
562R-1 Roll Steering Computer, Schematic Diagram TB3 (Sheet 3 of 7)
Figure 808


R68
10K
C18
4.7UF
R69
16.2K
R70
31.6K
R71
68.1K
R72
133K
N
M
L
K
P5
J5
J2
P2
A19
B20
A21
B22
BANK
MV
130+
80
40
20
10
A2
R73
31.6K
C20
4.7UF
+28VDC REG
R76
2700
R75
2700
C21
51
R77
90.9K
Q25
2N956
Q26
2N956
R74
8250
R78
56.2K
C22
4.7UF
2
1
TB3-E-2
TB3-F-1
TB3-A-3
W
P5
J5
J2
A23
P2
BANK IN

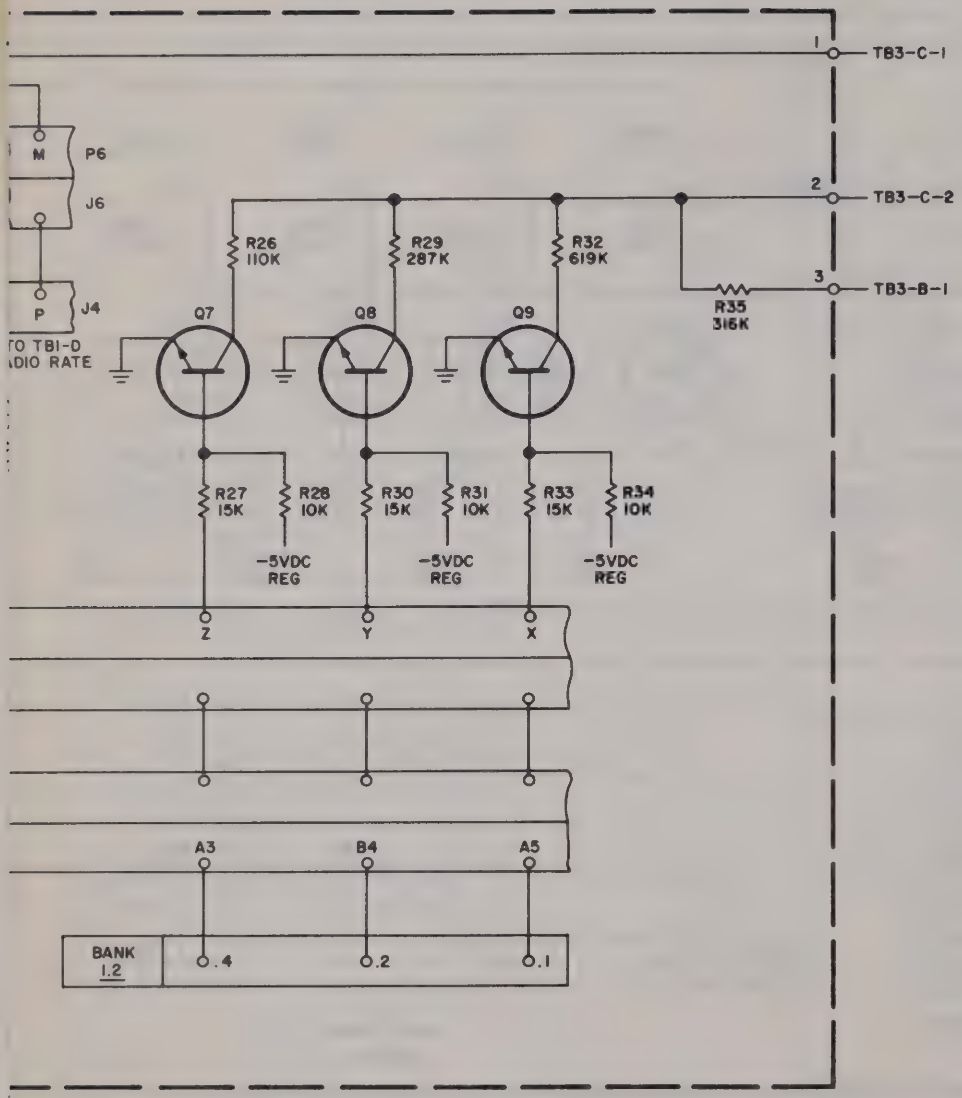

TB3-C-1
TB3-C-2
TB3-B-1
1
2
3
R1 422K
R2 348K
R3 383K
R4 562K
R5 909K
C1 0.1UF
C2 0.1UF
R10 121K
R11 121K
R14 237K
R15 237K
R18 464K
R19 464K
R22 1 MEGO
R23 1 MEGO
M P6
J6
P J4
TO TB1-D RADIO RATE
R26 110K
R29 287K
R32 619K
R35 316K
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
N P6
J6
R J4
TO TB1-C CD RATE GAIN (P4-R)
R6 10K
R7 15K
R8 15K
R9 10K
R12 15K
R13 10K
R16 15K
R17 10K
R20 15K
R21 10K
R24 15K
R25 10K
R27 15K
R28 10K
R30 15K
R31 10K
R33 15K
R34 10K
-5VDC REG
P5
U
V
A
B
C
D
Z
Y
X
J5
J2
P2
A1
B2
B6
A7
B8
A9
A3
B4
A5
CD 3.2
1
.5
RADIO 30
16
8
4
2
BANK 1.2
.4
.2
.1
RATE GAIN TB3-A

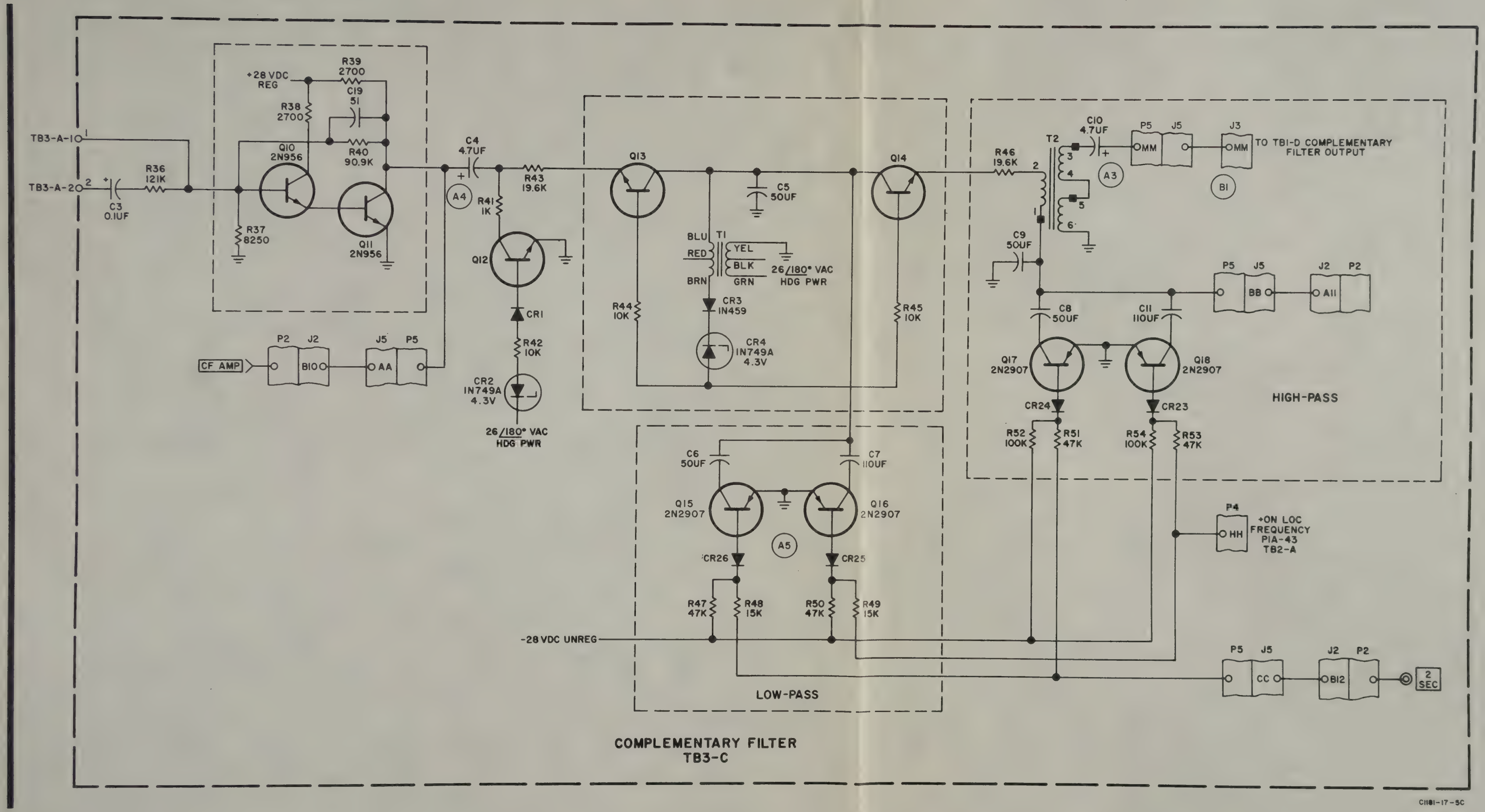
562R-1 Roll Steering Computer, Schematic Diagram TB3 (Sheet 3 of 7)
Figure 808


1
TB3-C-1
M
P6
J6
2
TB3-C-2
R26
110K
R29
287K
R32
619K
3
TB3-B-1
R35
316K
P
J4
TO TB1-D
ADIO RATE
Q7
Q8
Q9
R27
15K
R28
10K
R30
15K
R31
10K
R33
15K
R34
10K
-5VDC
REG
-5VDC
REG
-5VDC
REG
Z
Y
X
A3
B4
A5
BANK
1.2
.4
.2
.1

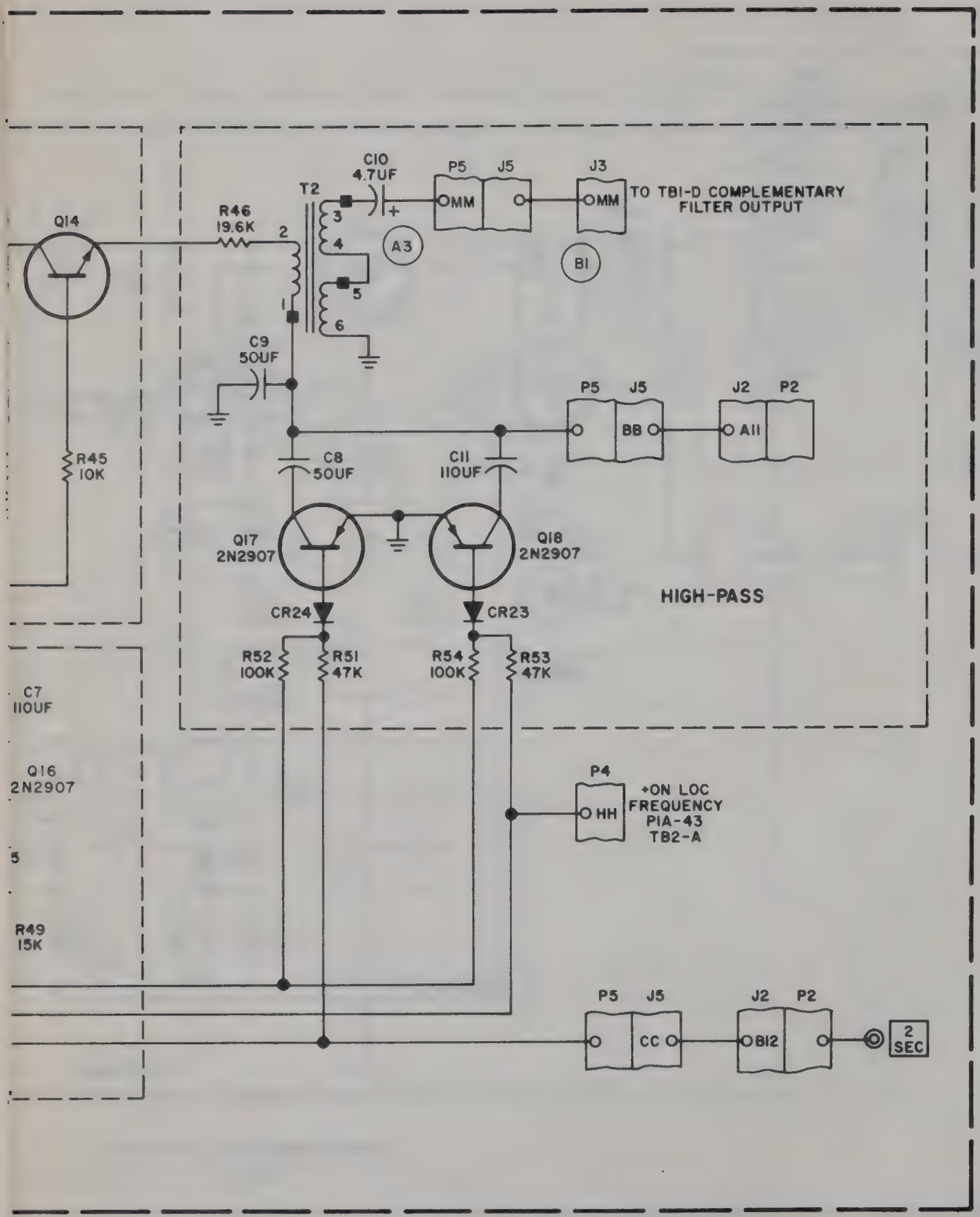

+28 VDC
REG
R39
2700
C19
51
R38
2700
TB3-A-1
1
TB3-A-2
2
+
C3
0.1UF
R36
121K
Q10
2N956
R40
90.9K
R37
8250
Q11
2N956
C4
4.7UF
+
A4
R41
1K
R43
19.6K
Q12
CR1
R42
10K
CR2
1N749A
4.3V
26 /180° VAC
HDG PWR
P2
J2
J5
P5
CF AMP
B10
AA
Q13
C5
50UF
BLU
T1
RED
BRN
YEL
BLK
GRN
26 /180° VAC
HDG PWR
R44
10K
CR3
1N459
CR4
1N749A
4.3V
C6
50UF
Q15
2N2907
A5
CR26
CR2
R47
47K
R48
15K
R50
47K
-28 VDC UNREG
LOW-PASS
COMPLEMENTARY FILTER
TB3-C

562R-1 Roll Steering Computer, Schematic Diagram TB3 (Sheet 4 of 7)
Figure 808

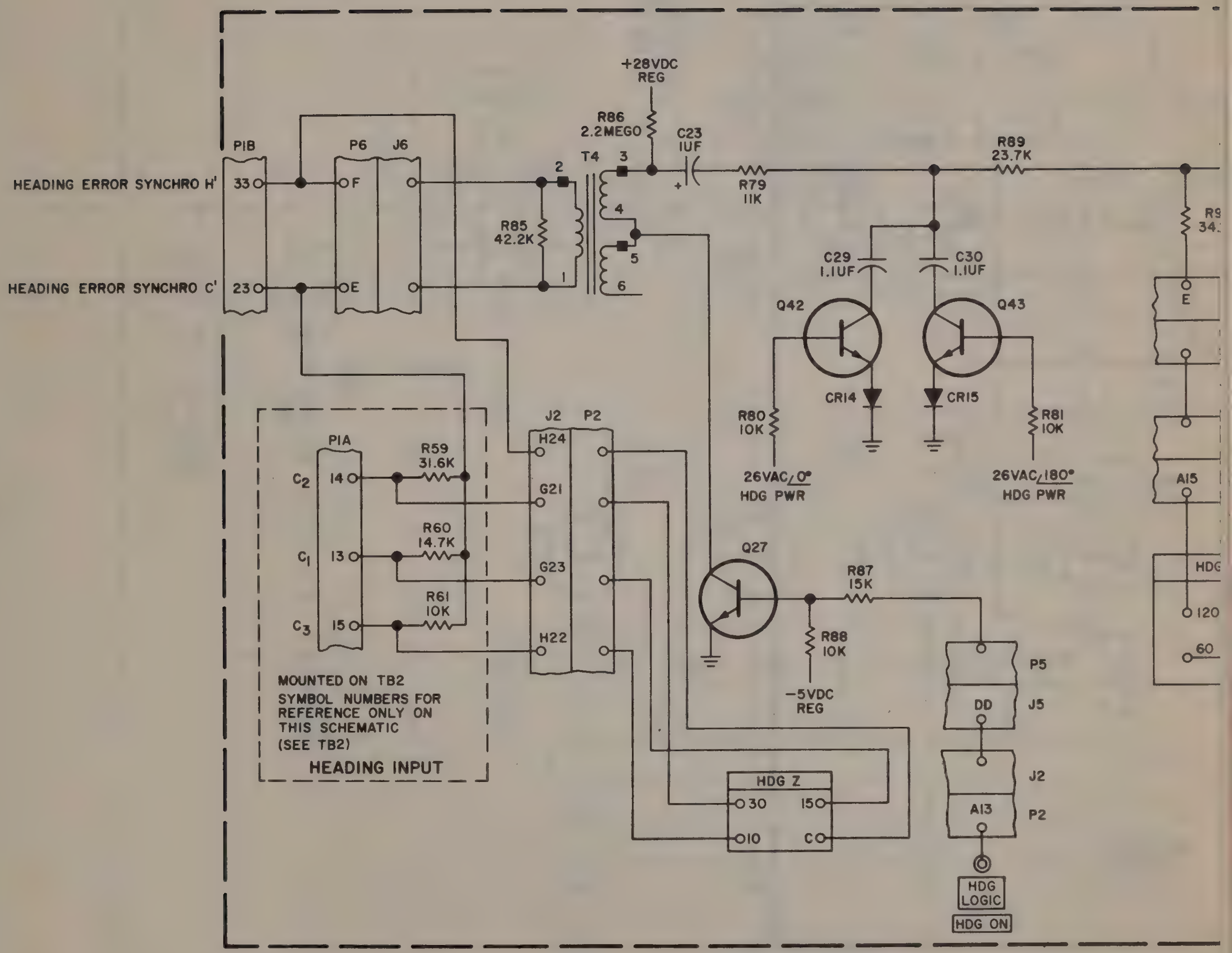

1
TB3-C-1
M
P6
J6
2
TB3-C-2
R26
110K
R29
287K
R32
619K
3
TB3-B-1
R35
316K
P
J4
TO TB1-D
ADIO RATE
Q7
Q8
Q9
R27
15K
R28
10K
R30
15K
R31
10K
R33
15K
R34
10K
-5VDC
REG
-5VDC
REG
-5VDC
REG
Z
Y
X
A3
B4
A5
BANK
1.2
.4
.2
.1


TB3-A-1
1
TB3-A-2
2
C3
0.1UF
R36
121K
+28 VDC
REG
R39
2700
C19
51
R38
2700
R40
90.9K
Q10
2N956
Q11
2N956
R37
8250
C4
4.7UF
+
A4
R41
1K
R43
19.6K
Q12
CR1
R42
10K
CR2
1N749A
4.3V
26/180° VAC
HDG PWR
CF AMP
P2
J2
B10
J5
P5
AA
Q13
C5
50UF
BLU
T1
RED
YEL
BLK
BRN
GRN
26/180° VAC
HDG PWR
CR3
1N459
CR4
1N749A
4.3V
R44
10K
Q14
R45
10K
C6
50UF
C7
110UF
Q15
2N2907
Q16
2N2907
A5
CR26
CR25
R47
47K
R48
15K
R50
47K
R49
15K
-28 VDC UNREG
LOW-PASS
R46
19.6K
T2
2
3
4
1
5
6
C10
4.7UF
+
A3
P5
J5
MM
J3
MM
TO TB1-D COMPLEMENTARY
FILTER OUTPUT
B1
C9
50UF
P5
J5
BB
J2
P2
A11
C8
50UF
C11
110UF
Q17
2N2907
Q18
2N2907
HIGH-PASS
CR24
CR23
R52
100K
R51
47K
R54
100K
R53
47K
P4
HH
+ON LOC
FREQUENCY
PIA-43
TB2-A
P5
J5
CC
J2
P2
B12
2
SEC
COMPLEMENTARY FILTER
TB3-C
C1181-17-5C

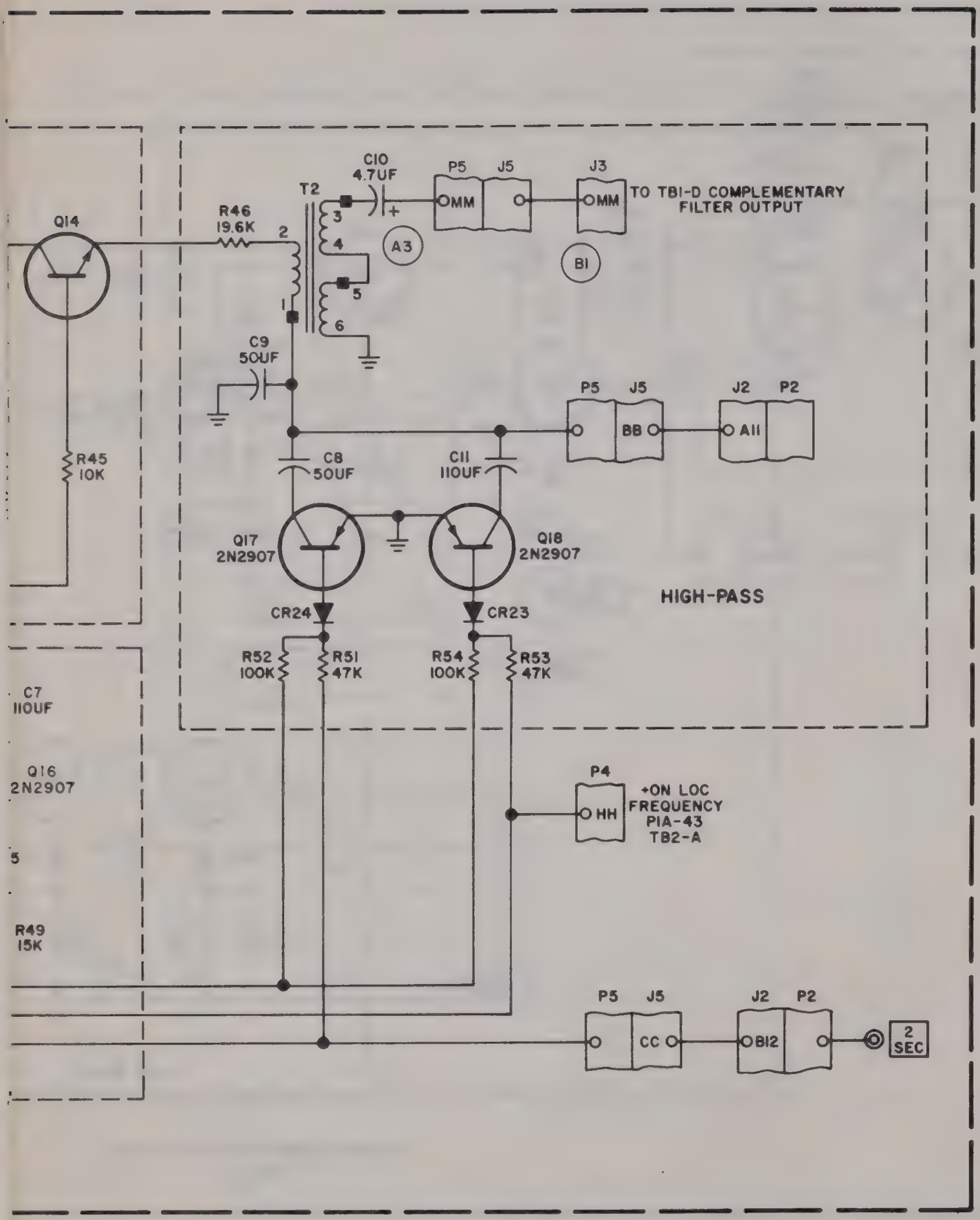
562R-1 Roll Steering Computer, Schematic Diagram TB3 (Sheet 4 of 7)
Figure 808


Q14
R46
19.6K
2
T2
3
4
5
6
1
C10
4.7UF
+
A3
P5
J5
MM
J3
MM
TO TBI-D COMPLEMENTARY
FILTER OUTPUT
BI
C9
50UF
R45
10K
P5
J5
BB
J2
P2
AII
C8
50UF
CII
110UF
Q17
2N2907
Q18
2N2907
CR24
CR23
HIGH-PASS
R52
100K
R51
47K
R54
100K
R53
47K
C7
110UF
Q16
2N2907
5
R49
15K
P4
HH
+ON LOC
FREQUENCY
PIA-43
TB2-A
P5
J5
CC
J2
P2
BI2
2
SEC

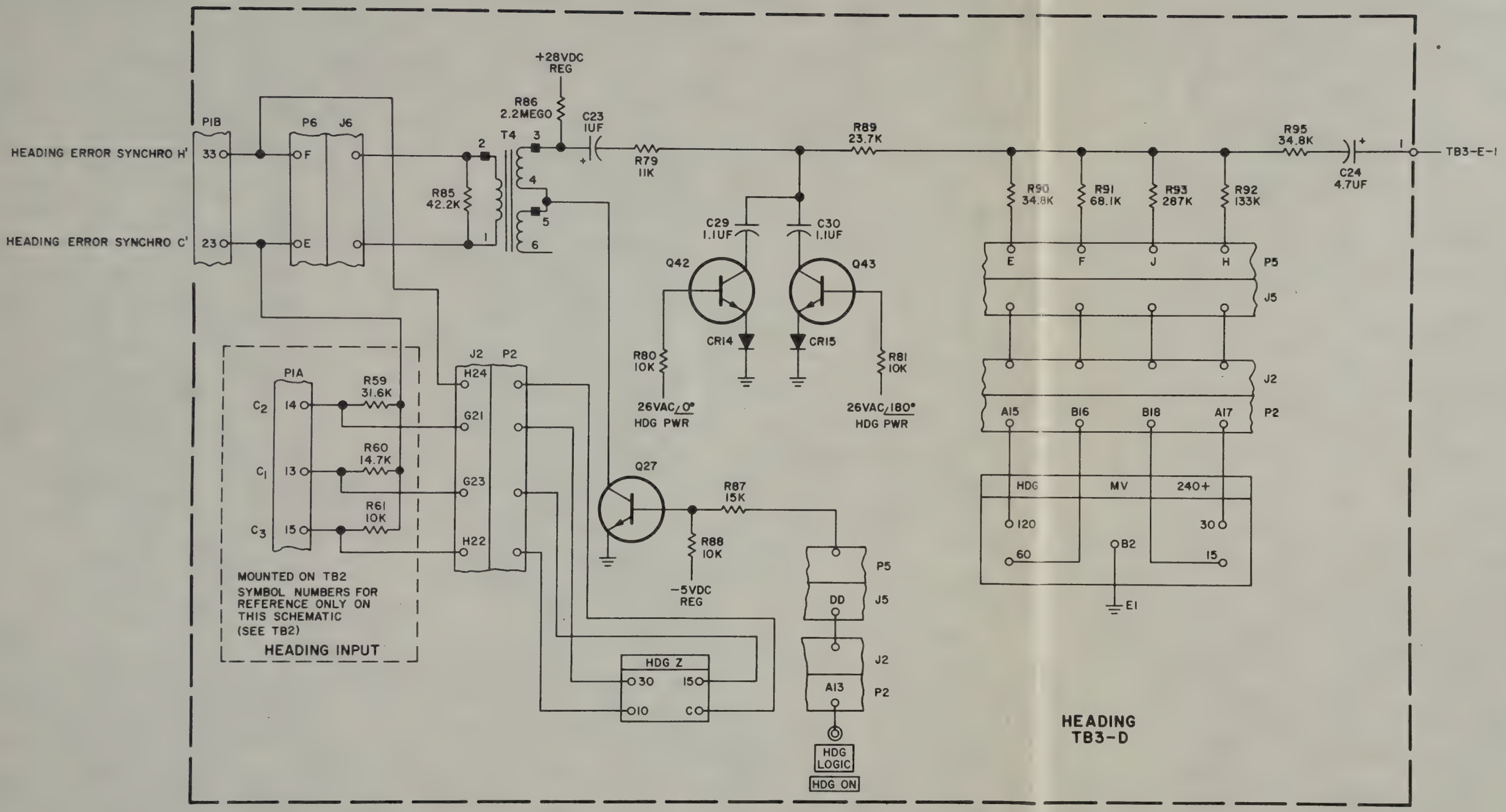
C1181-17-5C


+28VDC
REG
R86
2.2MEGO
C23
1UF
R89
23.7K
R79
11K
T4
PIB
P6
J6
HEADING ERROR SYNCHRO H'
33
F
HEADING ERROR SYNCHRO C'
23
E
R85
42.2K
2
3
4
5
1
6
R9
34.
C29
1.1UF
C30
1.1UF
Q42
Q43
CR14
CR15
R80
10K
R81
10K
26VAC/0°
HDG PWR
26VAC/180°
HDG PWR
E
A15
HDG
120
60
PIA
C2
14
R59
31.6K
C1
13
R60
14.7K
C3
15
R61
10K
J2
P2
H24
G21
G23
H22
Q27
R87
15K
R88
10K
-5VDC
REG
P5
DD
J5
J2
A13
P2
HDG LOGIC
HDG ON
MOUNTED ON TB2
SYMBOL NUMBERS FOR REFERENCE ONLY ON THIS SCHEMATIC
(SEE TB2)
HEADING INPUT
HDG Z
30
15
10
C

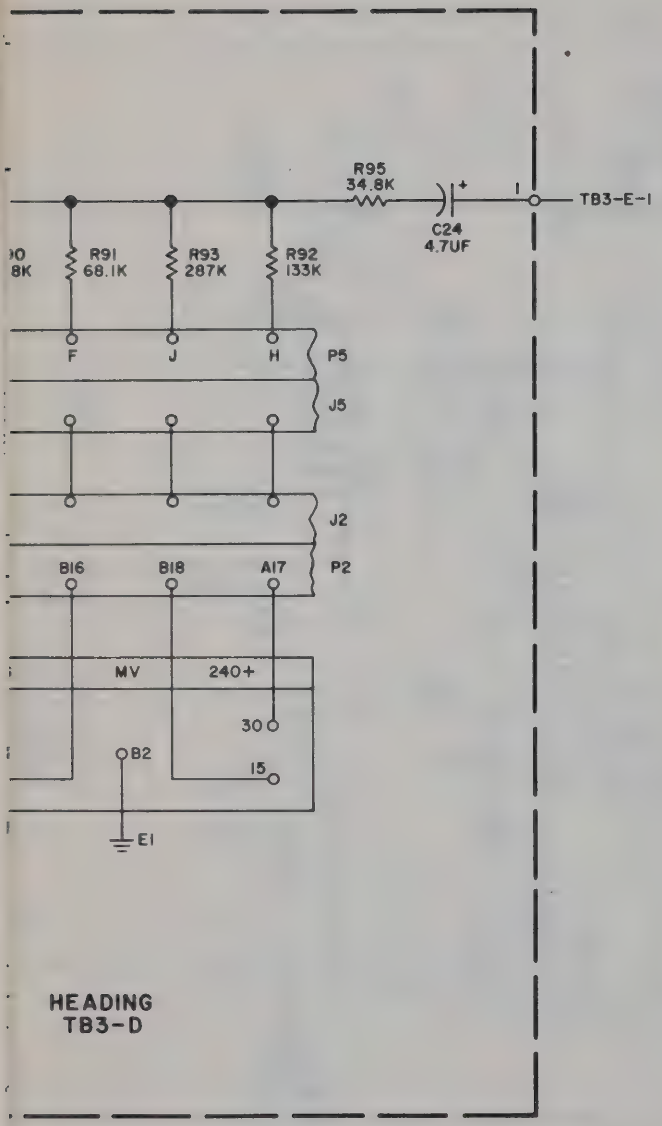
562R-1 Roll Steering Computer, Schematic Diagram TB3 (Sheet 5 of 7)
Figure 808

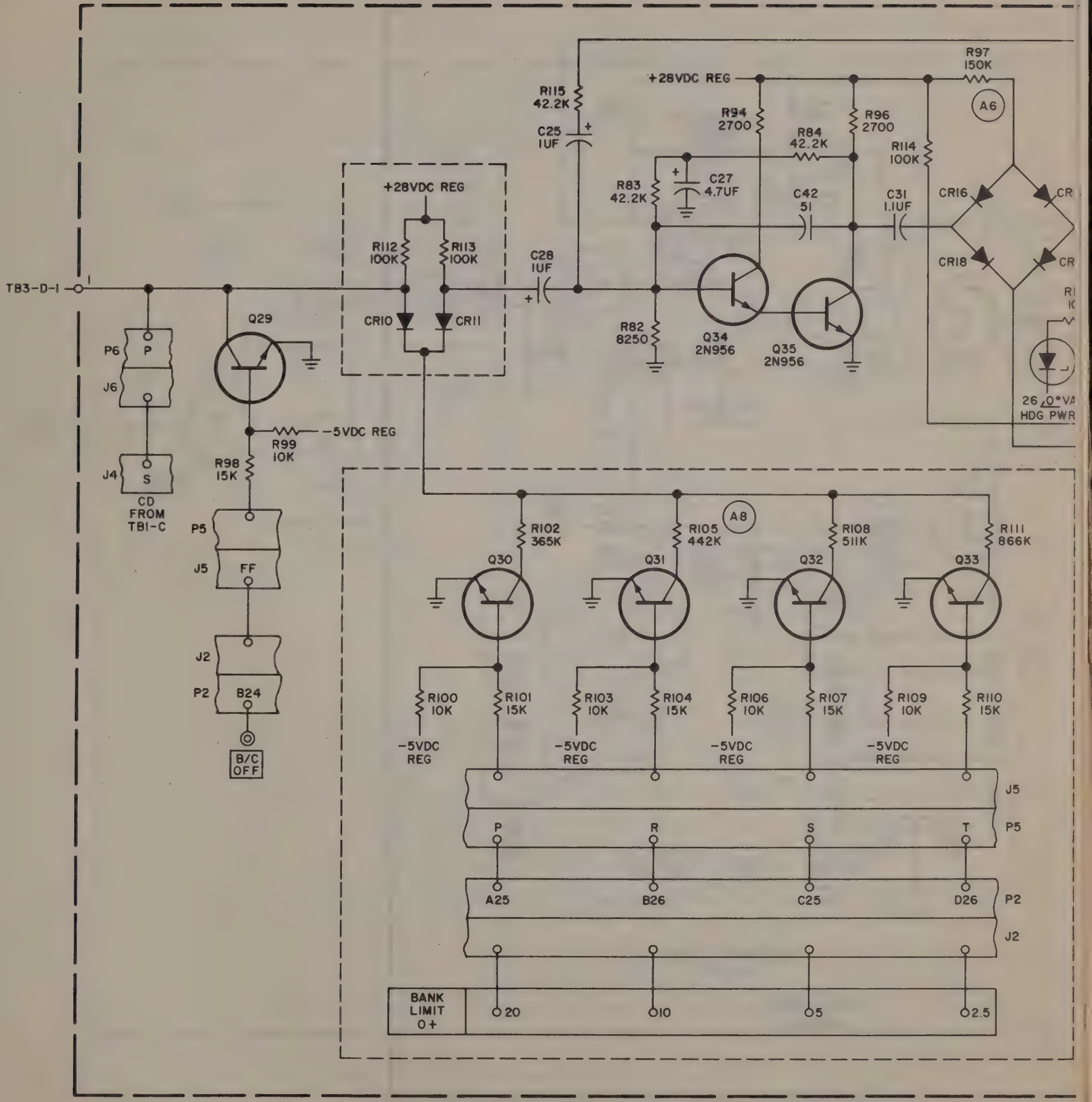

Q14
R46
19.6K
T2
C10
4.7UF
P5
J5
J3
MM
MM
TO TB1-D COMPLEMENTARY
FILTER OUTPUT
A3
B1
C9
50UF
P5
J5
J2
P2
BB
A11
C8
50UF
C11
110UF
R45
10K
Q17
2N2907
Q18
2N2907
HIGH-PASS
CR24
CR23
R52
100K
R51
47K
R54
100K
R53
47K
C7
110UF
Q16
2N2907
R49
15K
P4
HH
+ON LOC
FREQUENCY
P1A-43
TB2-A
P5
J5
J2
P2
CC
B12
2
SEC

C1181-17-5C

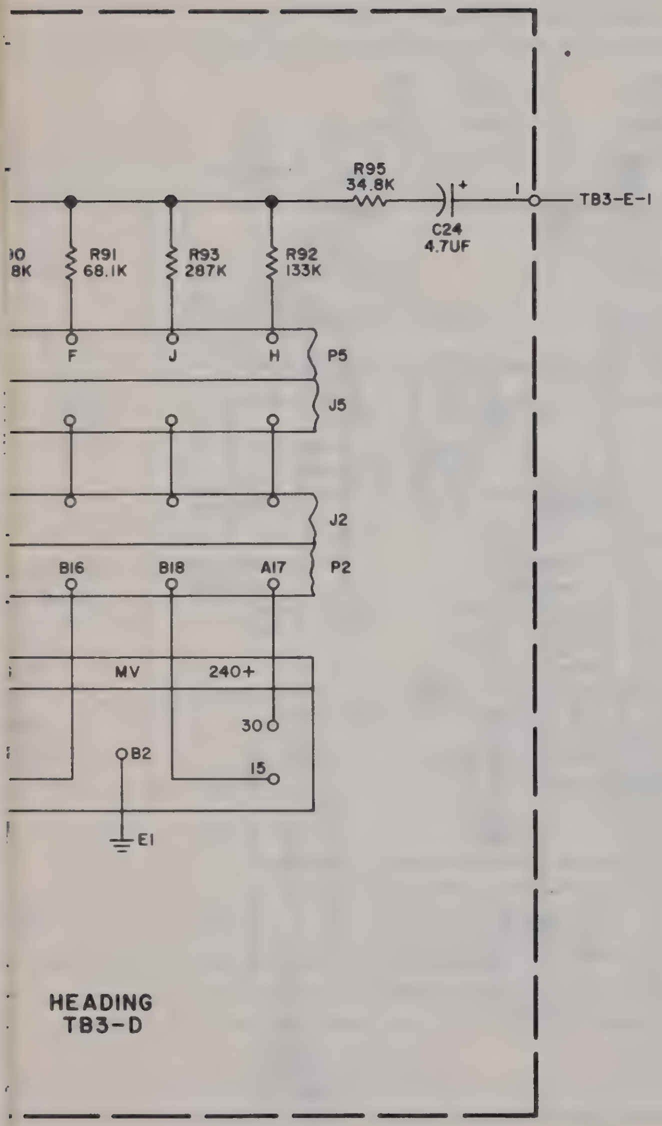

HEADING ERROR SYNCHRO H'
HEADING ERROR SYNCHRO C'
P1B
33
23
P6
J6
F
E
+28VDC REG
R86 2.2MEGO
T4
2
3
4
5
6
1
R85 42.2K
C23 1UF
R79 11K
R89 23.7K
R95 34.8K
C24 4.7UF
1
TB3-E-1
R90 34.8K
R91 68.1K
R93 287K
R92 133K
E
F
J
H
P5
J5
J2
A15
B16
B18
A17
P2
HDG
MV
240+
120
30
60
B2
15
E1
C29 1.1UF
C30 1.1UF
Q42
Q43
CR14
CR15
R80 10K
R81 10K
26VAC/0° HDG PWR
26VAC/180° HDG PWR
P1A
C2
14
R59 31.6K
C1
13
R60 14.7K
C3
15
R61 10K
MOUNTED ON TB2 SYMBOL NUMBERS FOR REFERENCE ONLY ON THIS SCHEMATIC (SEE TB2)
HEADING INPUT
J2
P2
H24
G21
G23
H22
Q27
R87 15K
R88 10K
-5VDC REG
P5
DD
J5
J2
A13
P2
HDG LOGIC
HDG ON
HDG Z
30
15
10
C
HEADING TB3-D

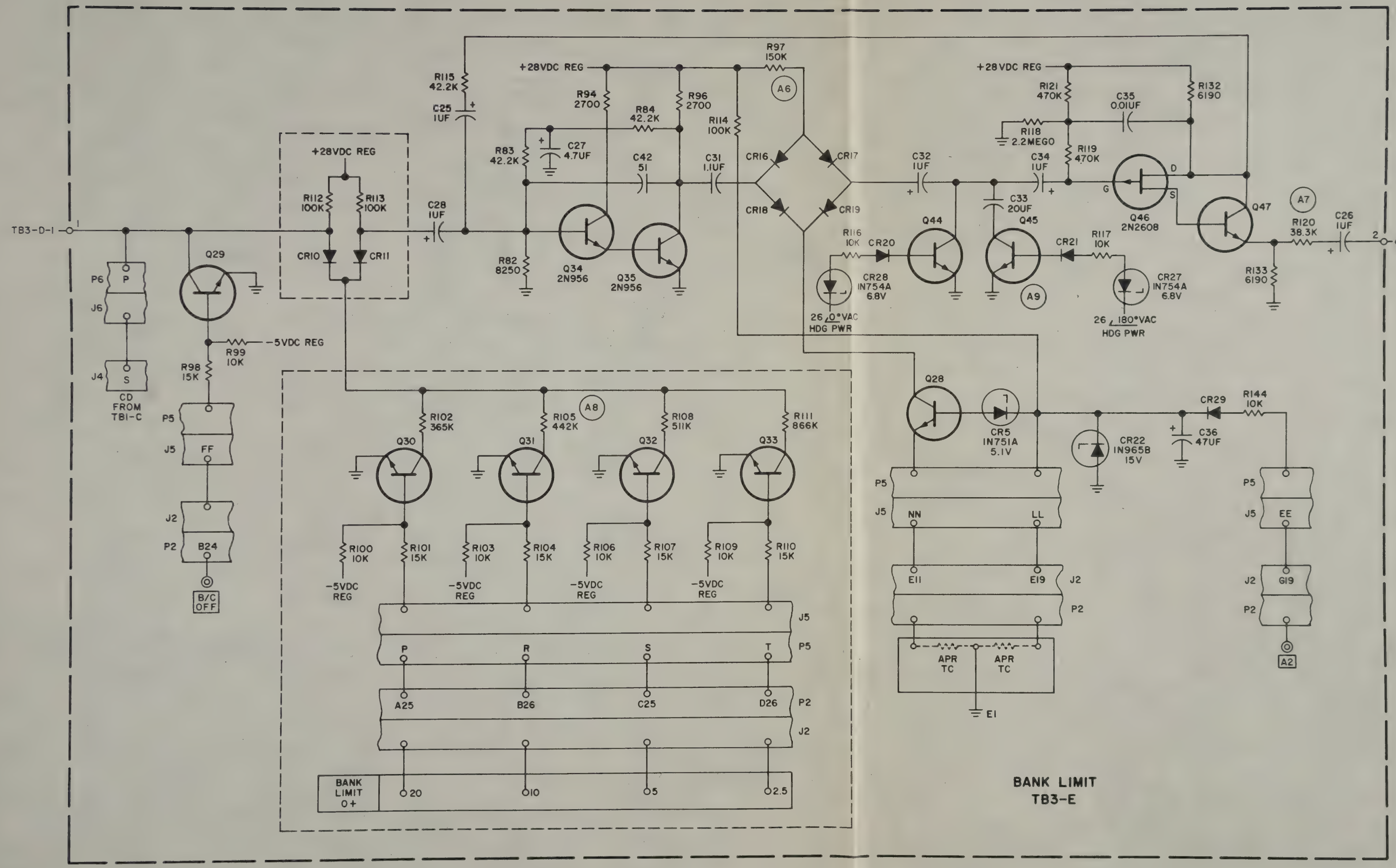
562R-1 Roll Steering Computer, Schematic Diagram TB3 (Sheet 5 of 7)
Figure 808


R95
34.8K
C24
4.7UF
1
TB3-E-1
R91
68.1K
R93
287K
R92
133K
F
J
H
P5
J5
J2
P2
B16
B18
A17
MV
240+
30
B2
15
E1
HEADING
TB3-D

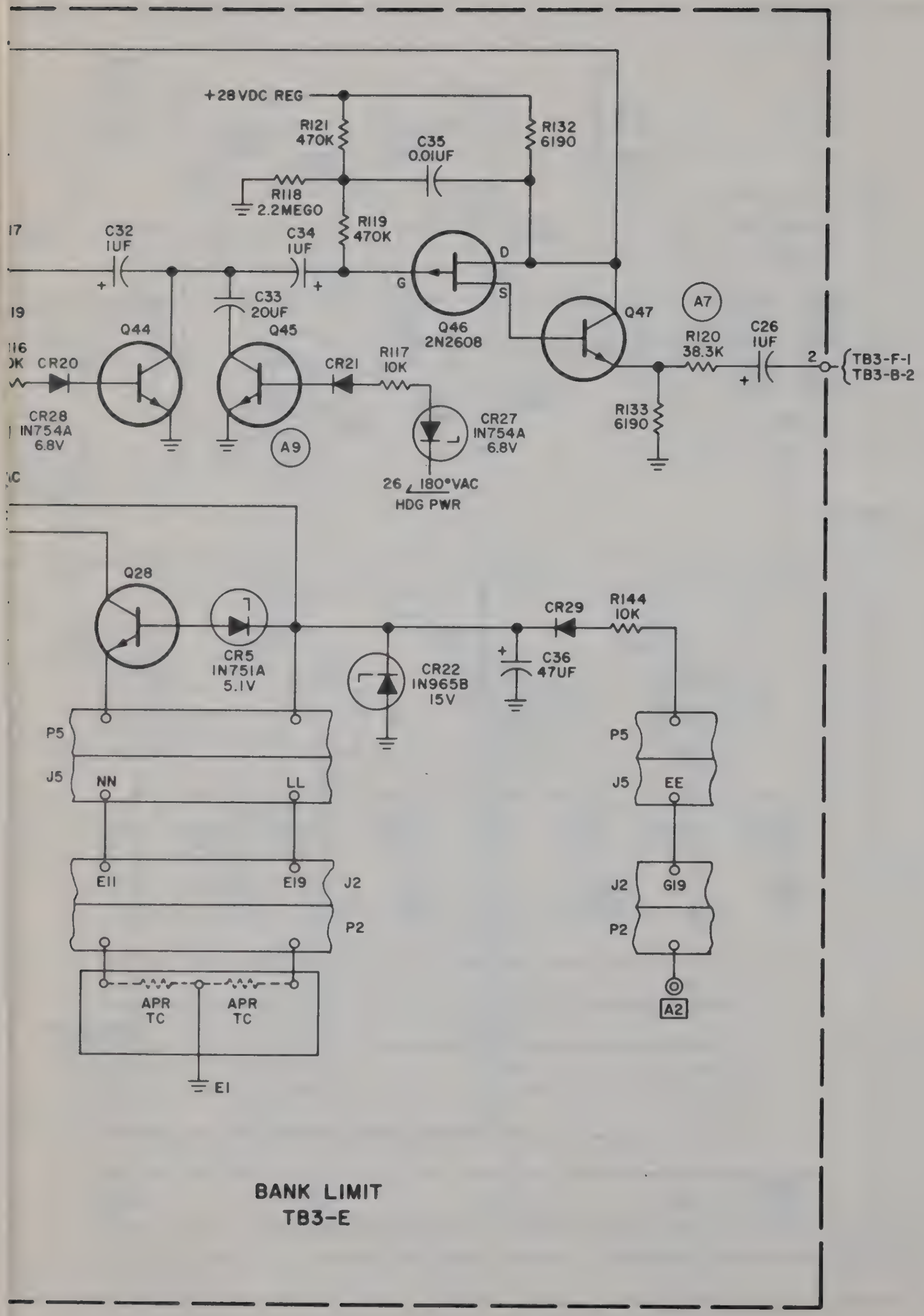

TB3-D-1
1
P6
P
J6
J4
S
CD
FROM
TB1-C
Q29
R99
10K
-5VDC REG
R98
15K
P5
J5
FF
J2
P2
B24
B/C
OFF
+28VDC REG
R112
100K
R113
100K
CR10
CR11
C28
1UF
R115
42.2K
C25
1UF
+28VDC REG
R94
2700
R96
2700
R84
42.2K
R83
42.2K
C27
4.7UF
C42
51
C31
1.1UF
R97
150K
A6
R114
100K
CR16
CR18
R82
8250
Q34
2N956
Q35
2N956
26 ∠0° VA
HDG PWR
A8
R102
365K
R105
442K
R108
511K
R111
866K
Q30
Q31
Q32
Q33
R100
10K
R101
15K
R103
10K
R104
15K
R106
10K
R107
15K
R109
10K
R110
15K
-5VDC
REG
J5
P
R
S
T
P5
A25
B26
C25
D26
P2
J2
BANK
LIMIT
0+
20
10
5
2.5

562R-1 Roll Steering Computer, Schematic Diagram TB3 (Sheet 6 of 7)
Figure 808

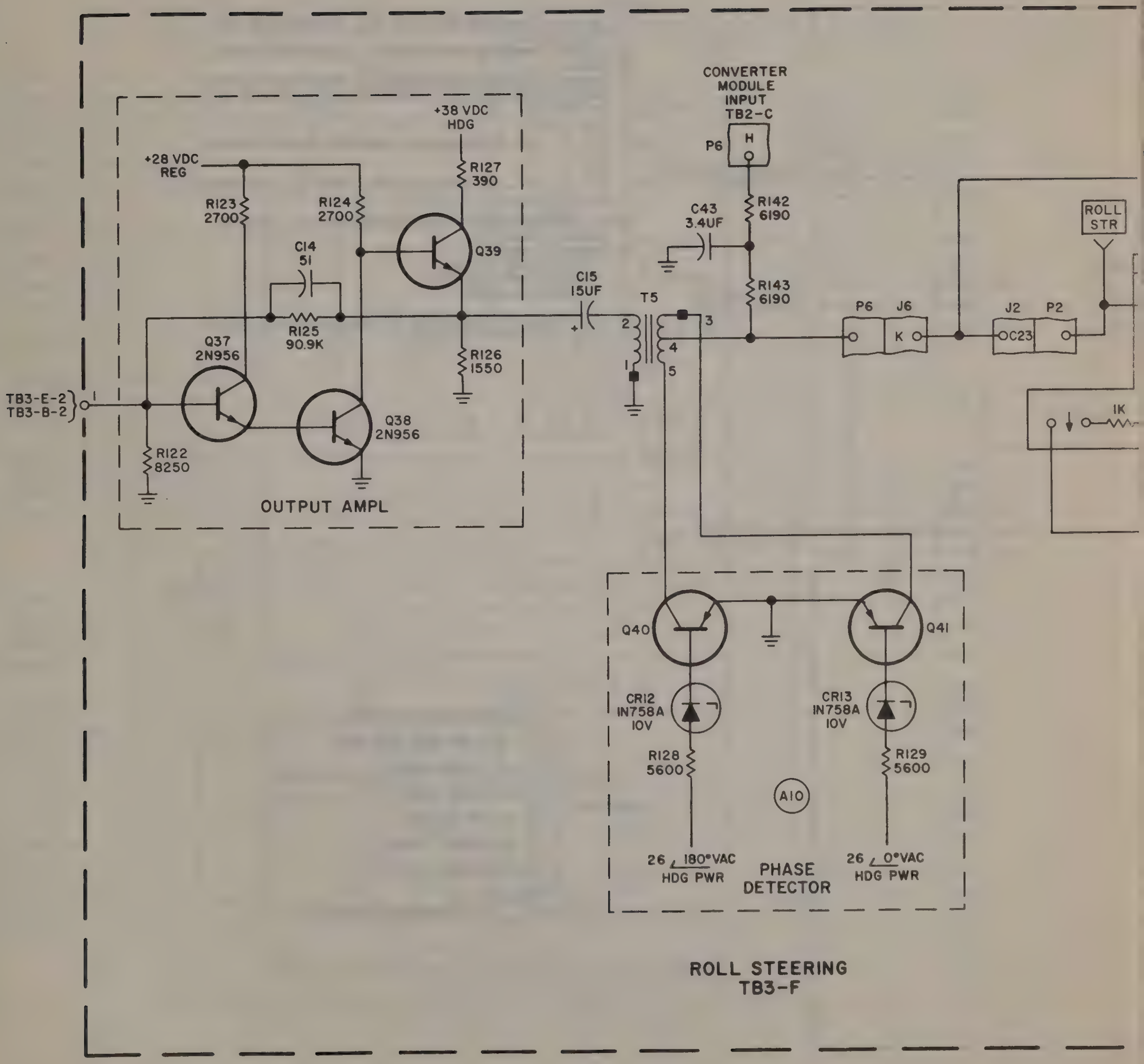

R95
34.8K
C24
4.7UF
1
TB3-E-1
8K
R91
68.1K
R93
287K
R92
133K
F
J
H
P5
J5
J2
B16
B18
A17
P2
MV
240+
30
B2
15
E1
HEADING
TB3-D


TB3-D-1
1
P6
P
J6
J4
S
CD FROM TB1-C
Q29
R99 10K
-5VDC REG
R98 15K
P5
J5
FF
J2
B24
P2
B/C OFF
+28VDC REG
R112 100K
R113 100K
CR10
CR11
C28 1UF
R115 42.2K
C25 1UF
+28VDC REG
R94 2700
R84 42.2K
R96 2700
R83 42.2K
C27 4.7UF
C42 51
C31 1.1UF
R82 8250
Q34 2N956
Q35 2N956
R97 150K
A6
R114 100K
CR16
CR17
CR18
CR19
C32 1UF
C33 20UF
C34 1UF
R116 10K
CR20
CR28 1N754A 6.8V
26 ∠0°VAC HDG PWR
Q44
Q45
A9
CR21
R117 10K
CR27 1N754A 6.8V
26 ∠180°VAC HDG PWR
+28VDC REG
R121 470K
C35 0.01UF
R132 6190
R118 2.2MEGO
R119 470K
Q46 2N2608
D
G
S
Q47
A7
R120 38.3K
C26 1UF
2
TB3-F-1
TB3-B-2
R133 6190
A8
R102 365K
R105 442K
R108 511K
R111 866K
Q30
Q31
Q32
Q33
R100 10K
R101 15K
R103 10K
R104 15K
R106 10K
R107 15K
R109 10K
R110 15K
-5VDC REG
-5VDC REG
-5VDC REG
-5VDC REG
J5
P5
P
R
S
T
A25
B26
C25
D26
P2
J2
BANK LIMIT 0+
20
10
5
2.5
Q28
CR5 1N751A 5.1V
CR22 1N965B 15V
C36 47UF
CR29
R144 10K
P5
J5
NN
LL
E11
E19
J2
P2
APR TC
APR TC
E1
P5
J5
EE
J2
G19
P2
A2
BANK LIMIT TB3-E

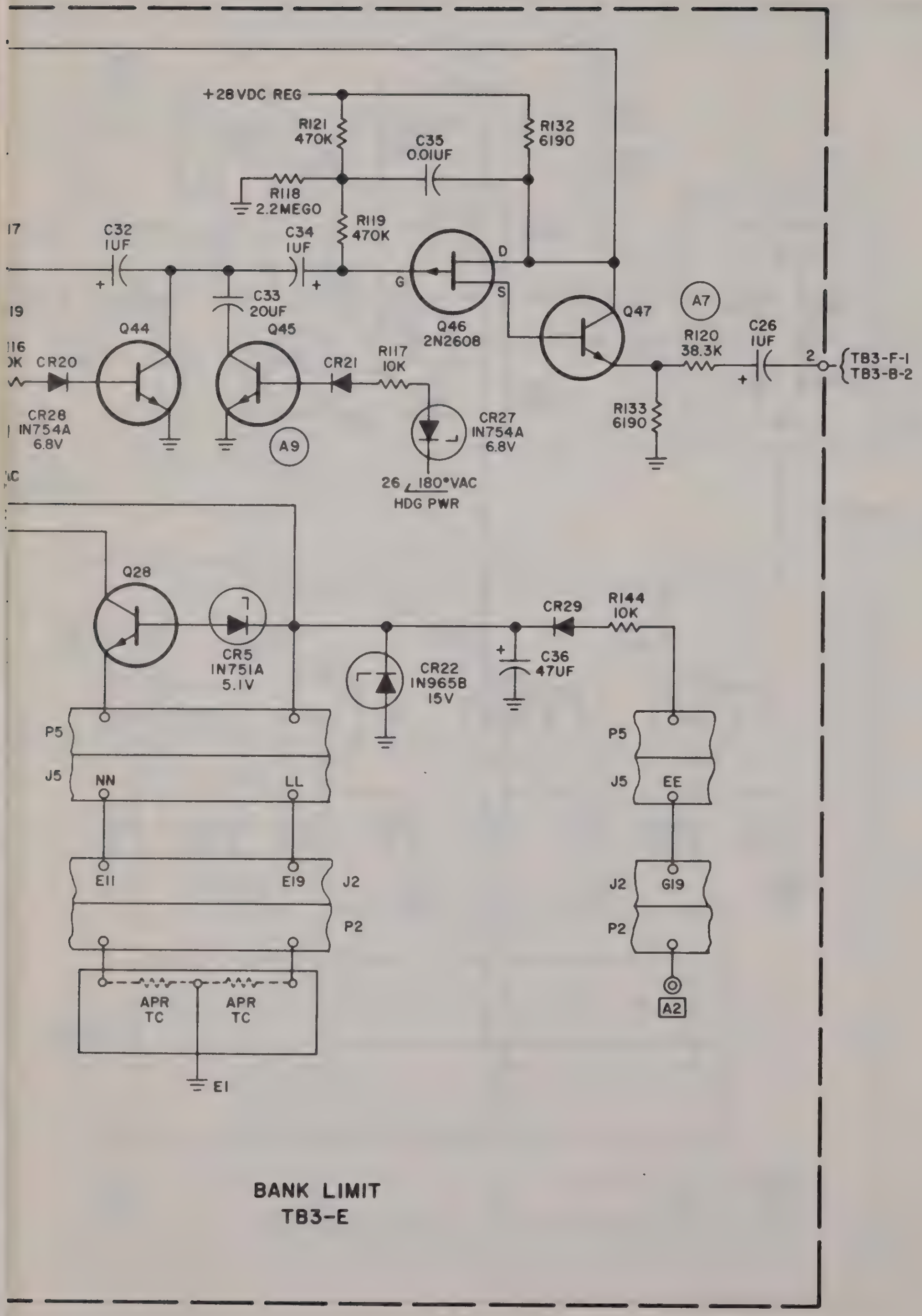
562R-1 Roll Steering Computer, Schematic Diagram TB3 (Sheet 6 of 7)
Figure 808

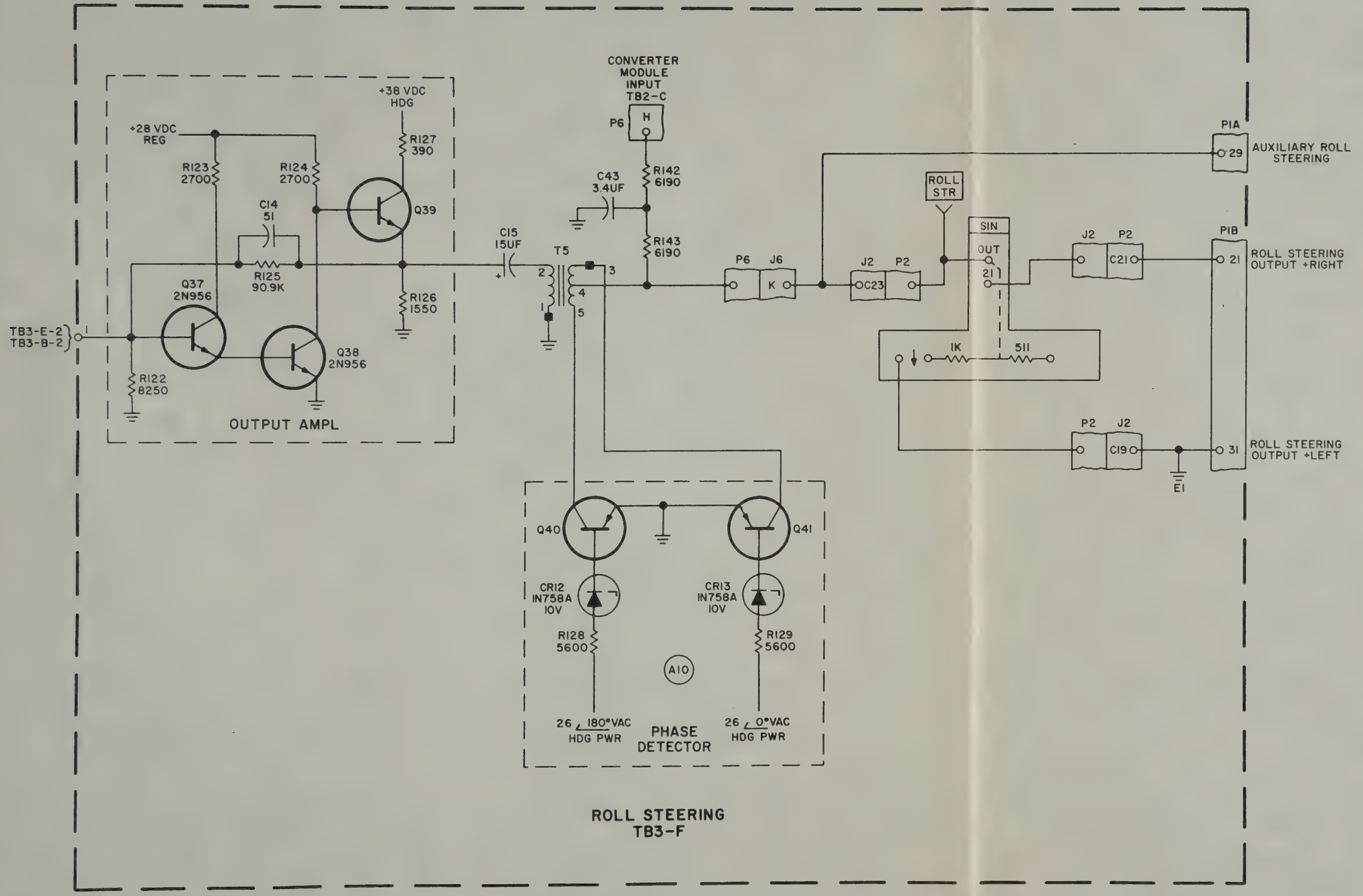

+28VDC REG
R121
470K
R132
6190
C35
0.01UF
R118
2.2MEGO
R119
470K
17
C32
1UF
C34
1UF
D
G
S
19
C33
20UF
Q44
Q45
Q46
2N2608
Q47
A7
116
CR20
CR28
1N754A
6.8V
CR21
R117
10K
CR27
1N754A
6.8V
A9
R120
38.3K
C26
1UF
2
TB3-F-1
TB3-B-2
R133
6190
26 ∠ 180°VAC
HDG PWR
Q28
CR5
1N751A
5.1V
CR22
1N965B
15V
C36
47UF
CR29
R144
10K
P5
J5
NN
LL
P5
J5
EE
E11
E19
J2
P2
J2
G19
P2
APR
TC
APR
TC
A2
E1

BANK LIMIT
TB3-E


CONVERTER MODULE INPUT TB2-C
P6
H
+38 VDC HDG
+28 VDC REG
R127 390
R123 2700
R124 2700
Q39
C43 3.4UF
R142 6190
R143 6190
ROLL STR
C14 51
R125 90.9K
C15 15UF
T5
2
3
4
1
5
Q37 2N956
R126 1550
P6
J6
K
J2
P2
C23
TB3-E-2
TB3-B-2
1
Q38 2N956
IK
R122 8250
OUTPUT AMPL
Q40
Q41
CR12 IN758A 10V
CR13 IN758A 10V
R128 5600
R129 5600
A10
26 ∠ 180°VAC HDG PWR
26 ∠ 0°VAC HDG PWR
PHASE DETECTOR
ROLL STEERING TB3-F

562R-1 Roll Steering Computer, Schematic Diagram TB3 (Sheet 7 of 7)
Figure 808


+28VDC REG
R121
470K
R132
6190
C35
0.01UF
R118
2.2MEGO
R119
470K
17
C32
1UF
C34
1UF
D
G
S
19
Q44
C33
20UF
Q45
Q46
2N2608
Q47
A7
R120
38.3K
C26
1UF
2
TB3-F-1
TB3-B-2
16
0K
CR20
CR21
R117
10K
CR28
1N754A
6.8V
A9
CR27
1N754A
6.8V
R133
6190
AC
26
180°VAC
HDG PWR
Q28
CR5
1N751A
5.1V
CR22
1N965B
15V
C36
47UF
CR29
R144
10K
P5
J5
NN
LL
EE
E11
E19
J2
G19
P2
APR
TC
APR
TC
A2
E1
BANK LIMIT
TB3-E


CONVERTER MODULE INPUT TB2-C
P6
H
+38 VDC HDG
+28 VDC REG
R127 390
R123 2700
R124 2700
Q39
C14 51
R125 90.9K
Q37 2N956
Q38 2N956
R126 1550
R122 8250
TB3-E-2
TB3-B-2
1
OUTPUT AMPL
C15 15UF
T5
2
1
3
4
5
C43 3.4UF
R142 6190
R143 6190
P6
J6
K
ROLL STR
J2
P2
C23
SIN
OUT
21
1K
511
J2
P2
C21
P2
J2
C19
E1
P1A
29
AUXILIARY ROLL STEERING
P1B
21
ROLL STEERING OUTPUT +RIGHT
31
ROLL STEERING OUTPUT +LEFT
Q40
Q41
CR12 1N758A 10V
CR13 1N758A 10V
R128 5600
R129 5600
A10
26 ∠180°VAC HDG PWR
PHASE DETECTOR
26 ∠0°VAC HDG PWR
ROLL STEERING TB3-F

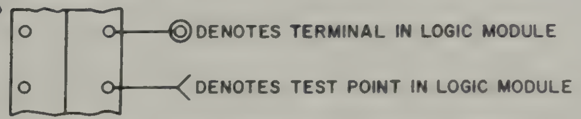
NOTES:

⟨1⟩ UNLESS OTHERWISE INDICATED, ALL TRANSISTORS ARE TYPE 2N718A.

⟨2⟩ UNLESS OTHERWISE INDICATED, ALL DIODES ARE TYPE 1N645.

⟨3⟩ UNLESS OTHERWISE INDICATED, ALL RESISTANCE VALUES ARE IN OHMS, AND ALL CAPACITANCE VALUES ARE IN PICOFARADS.

⟨4⟩


DENOTES TERMINAL IN LOGIC MODULE
DENOTES TEST POINT IN LOGIC MODULE

⟨5⟩ ALL GROUNDS EXCEPT CHASSIS GROUND ARE COMMON (SIGNAL GROUND 4.)

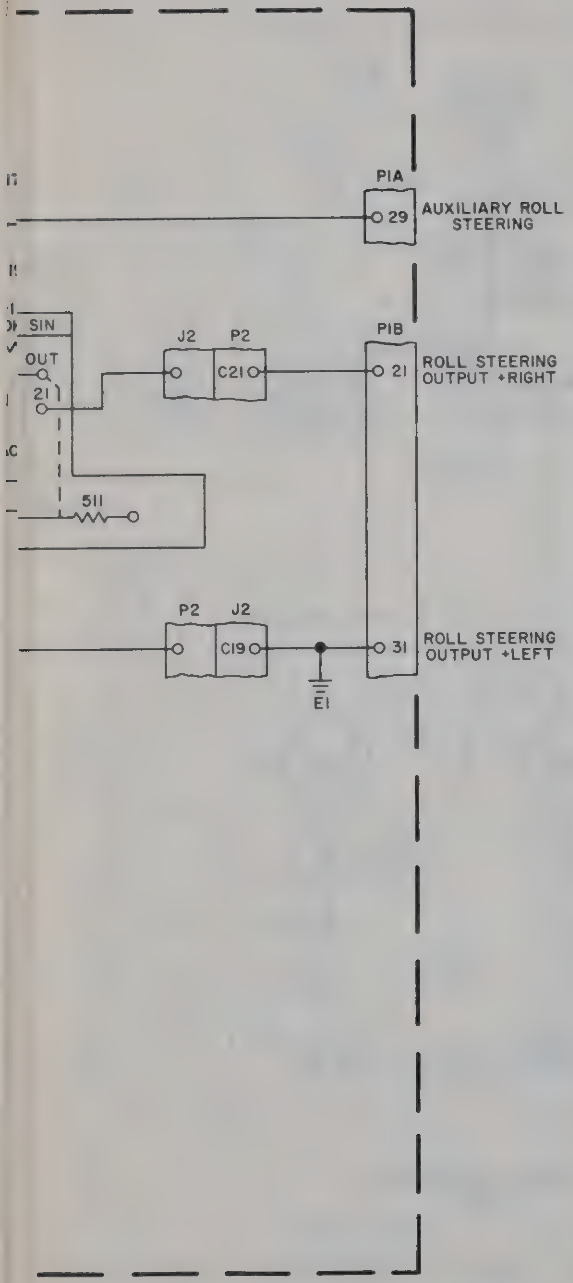
⟨6⟩ ABBREVIATIONS:
CD-COURSE DATUM
COMP-COMPLEMENTARY
LOC-LOCALIZER

⟨7⟩ (A1) INDICATES LOCATION OF CHANGE DESCRIBED IN THE REVISION TABLE.

FROM TB2-F

P6	
DD	26 VAC ∠0° HDG PWR
W	26 VAC ∠180° HDG PWR
Y	-5 VDC UNREG
Z	-5 VDC REG
S	+38 VDC HDG
T	-28 VDC UNREG
X	+28 VDC REG
MM	(CHASSIS GROUND)

562R-1 Roll Steering Computer, Schematic Diagram TB3 (Sheet 7 of 7)
Figure 808


PIA
29
AUXILIARY ROLL STEERING
SIN
OUT
21
J2
P2
C21
PIB
21
ROLL STEERING OUTPUT +RIGHT
511
P2
J2
C19
31
ROLL STEERING OUTPUT +LEFT
E1

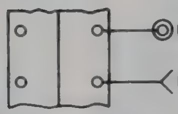
NOTES:

① UNLESS OTHERWISE INDICATED, ALL TRANSISTORS ARE TYPE 2N718A.

② UNLESS OTHERWISE INDICATED, ALL DIODES ARE TYPE IN645.

③ UNLESS OTHERWISE INDICATED, ALL RESISTANCE VALUES ARE IN OHMS, AND ALL CAPACITANCE VALUES ARE IN PICOFARADS.

④



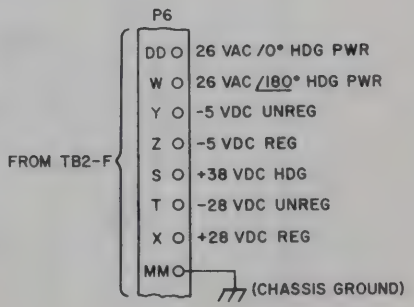
DENOTES TERMINAL IN LOGIC MODULE

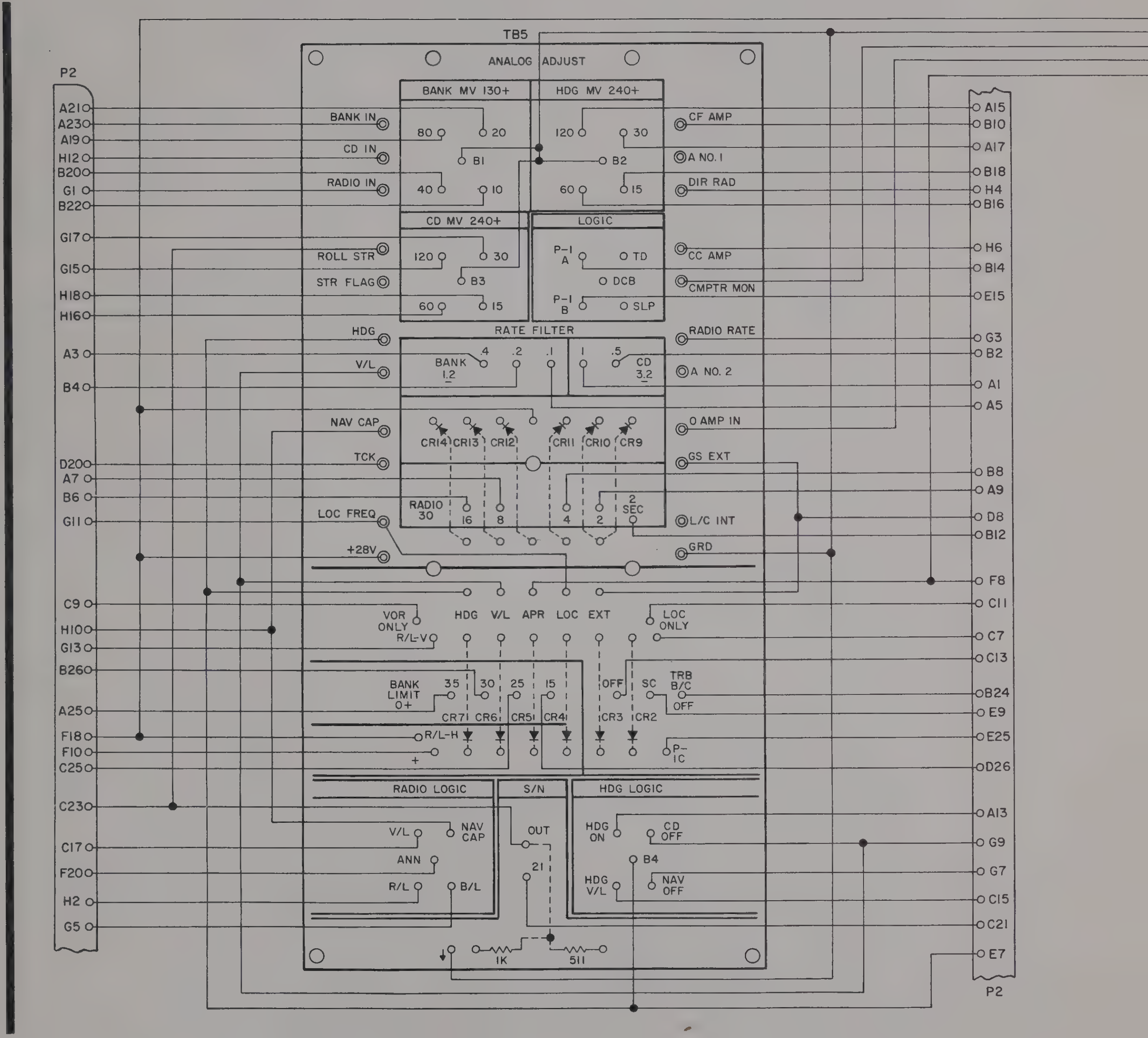
DENOTES TEST POINT IN LOGIC MODULE

⑤ ALL GROUNDS EXCEPT CHASSIS GROUND ARE COMMON (SIGNAL GROUND 4.)

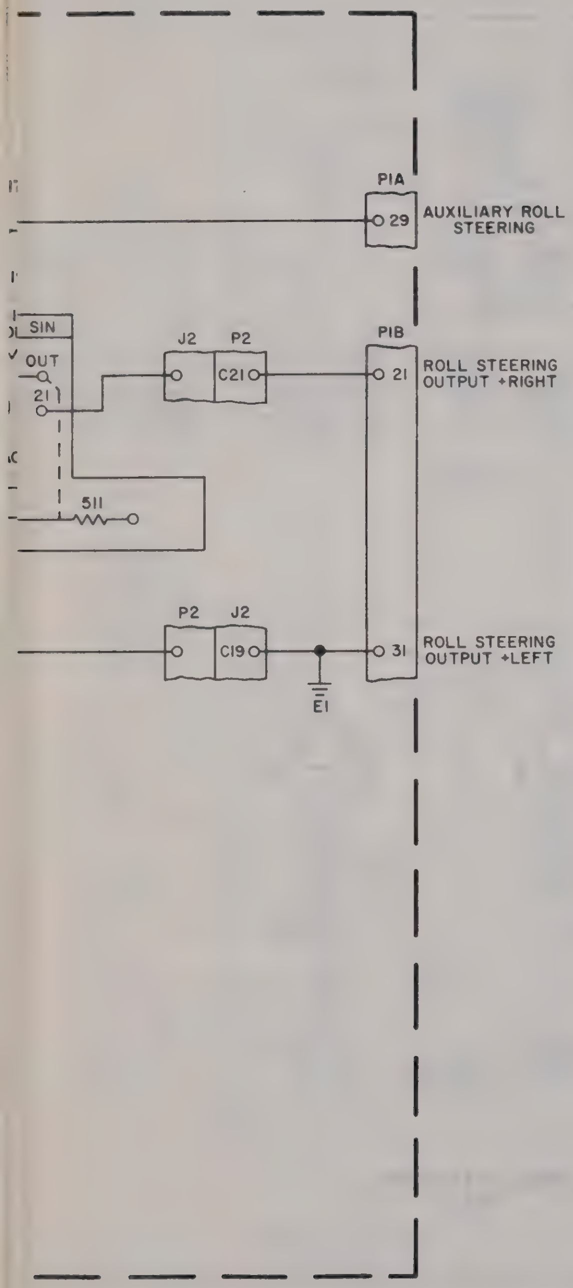
⑥ ABBREVIATIONS:
CD-COURSE DATUM
COMP-COMPLEMENTARY
LOC-LOCALIZER

⑦ (A1) INDICATES LOCATION OF CHANGE DESCRIBED IN THE REVISION TABLE.


P6
FROM TB2-F
DD
26 VAC /0° HDG PWR
W
26 VAC /180° HDG PWR
Y
-5 VDC UNREG
Z
-5 VDC REG
S
+38 VDC HDG
T
-28 VDC UNREG
X
+28 VDC REG
MM
(CHASSIS GROUND)

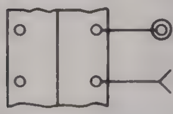

TB5
ANALOG ADJUST
P2
A21
A23
A19
H12
B20
G1
B22
G17
G15
H18
H16
A3
B4
D20
A7
B6
G11
C9
H10
G13
B26
A25
F18
F10
C25
C23
C17
F20
H2
G5
BANK MV 130+
HDG MV 240+
BANK IN
CD IN
RADIO IN
80
20
B1
40
10
120
30
B2
60
15
CF AMP
A NO. 1
DIR RAD
CD MV 240+
LOGIC
ROLL STR
STR FLAG
120
30
B3
60
15
P-1 A
TD
DCB
P-1 B
SLP
CC AMP
CMPTR MON
RATE FILTER
HDG
V/L
BANK 1.2
.4
.2
.1
1
.5
CD 3.2
RADIO RATE
A NO. 2
NAV CAP
TCK
CR14
CR13
CR12
CR11
CR10
CR9
0 AMP IN
GS EXT
RADIO 30
16
8
4
2
2 SEC
LOC FREQ
L/C INT
+28V
GRD
VOR ONLY
R/L-V
HDG
V/L
APR
LOC
EXT
LOC ONLY
BANK LIMIT 0+
35
30
25
15
OFF
SC
TRB B/C OFF
CR7
CR6
CR5
CR4
CR3
CR2
R/L-H
+
P-IC
RADIO LOGIC
S/N
HDG LOGIC
V/L
NAV CAP
OUT
ANN
21
R/L
B/L
HDG ON
CD OFF
B4
HDG V/L
NAV OFF
1K
511
A15
B10
A17
B18
H4
B16
H6
B14
E15
G3
B2
A1
A5
B8
A9
D8
B12
F8
C11
C7
C13
B24
E9
E25
D26
A13
G9
G7
C15
C21
E7
P2

562R-1 Logic Module, Wiring Diagram
Figure 809


SIN
OUT
21
511
J2
P2
C21
P2
J2
C19
E1
P1A
29
AUXILIARY ROLL STEERING
P1B
21
ROLL STEERING OUTPUT +RIGHT
31
ROLL STEERING OUTPUT +LEFT

NOTES:

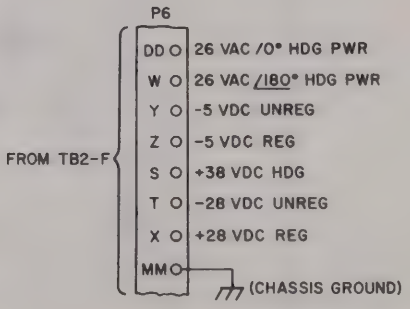
1. UNLESS OTHERWISE INDICATED, ALL TRANSISTORS ARE TYPE 2N718A.
2. UNLESS OTHERWISE INDICATED, ALL DIODES ARE TYPE 1N645.
3. UNLESS OTHERWISE INDICATED, ALL RESISTANCE VALUES ARE IN OHMS, AND ALL CAPACITANCE VALUES ARE IN PICOFARADS.
4.

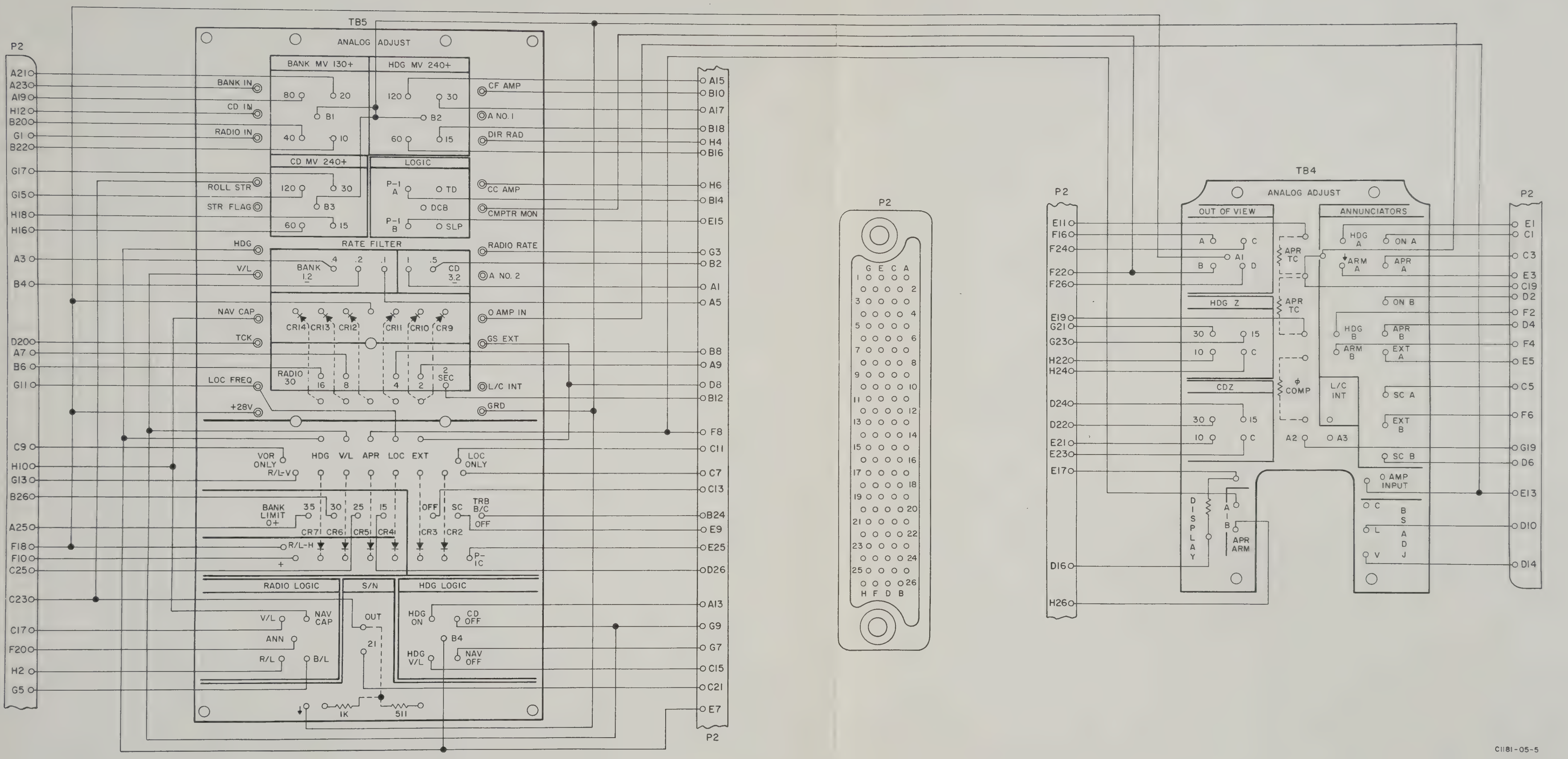


DENOTES TERMINAL IN LOGIC MODULE

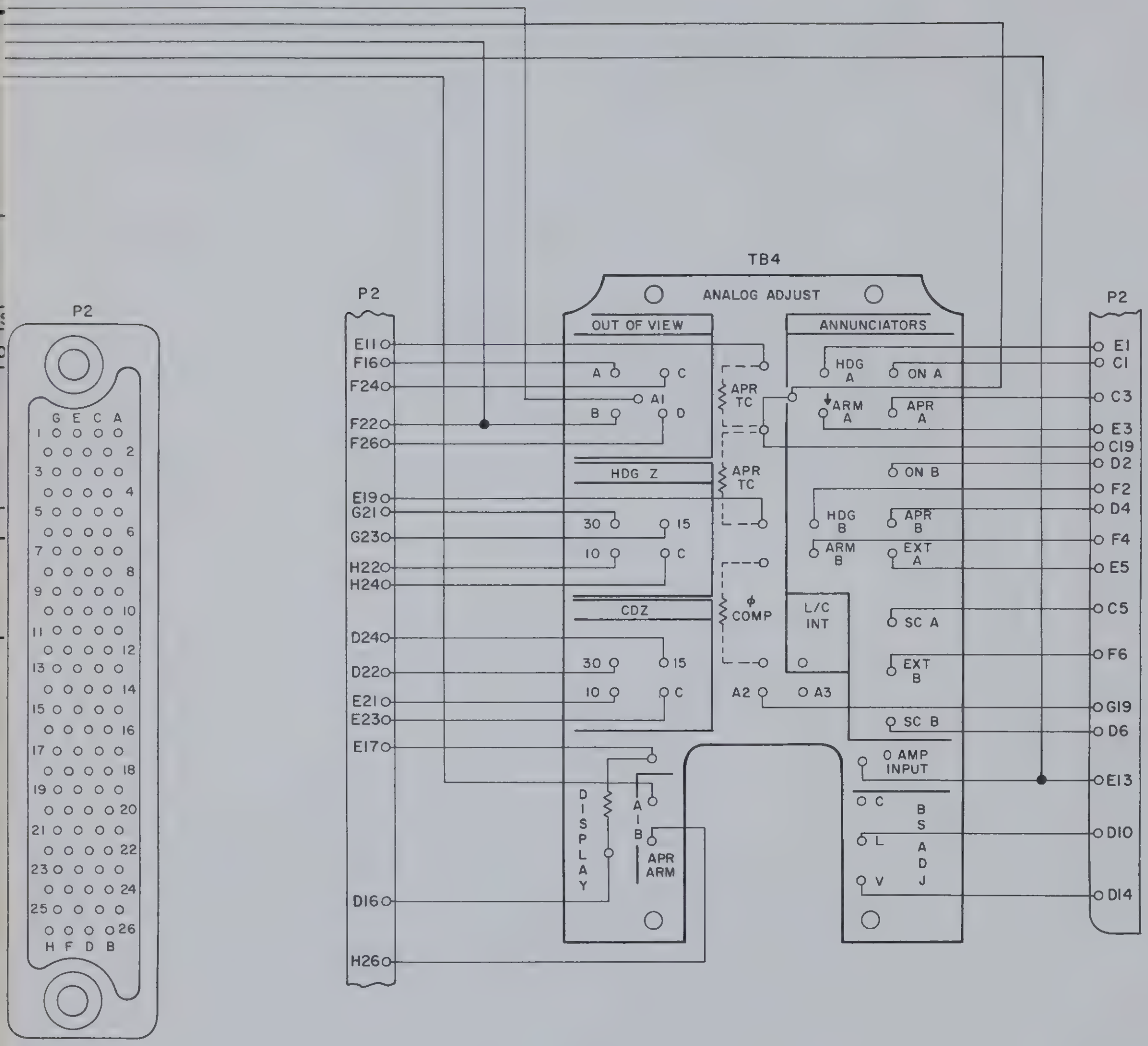
DENOTES TEST POINT IN LOGIC MODULE

5. ALL GROUNDS EXCEPT CHASSIS GROUND ARE COMMON (SIGNAL GROUND 4.)
6. ABBREVIATIONS:
   - CD-COURSE DATUM
   - COMP-COMPLEMENTARY
   - LOC-LOCALIZER
7. (A1) INDICATES LOCATION OF CHANGE DESCRIBED IN THE REVISION TABLE.

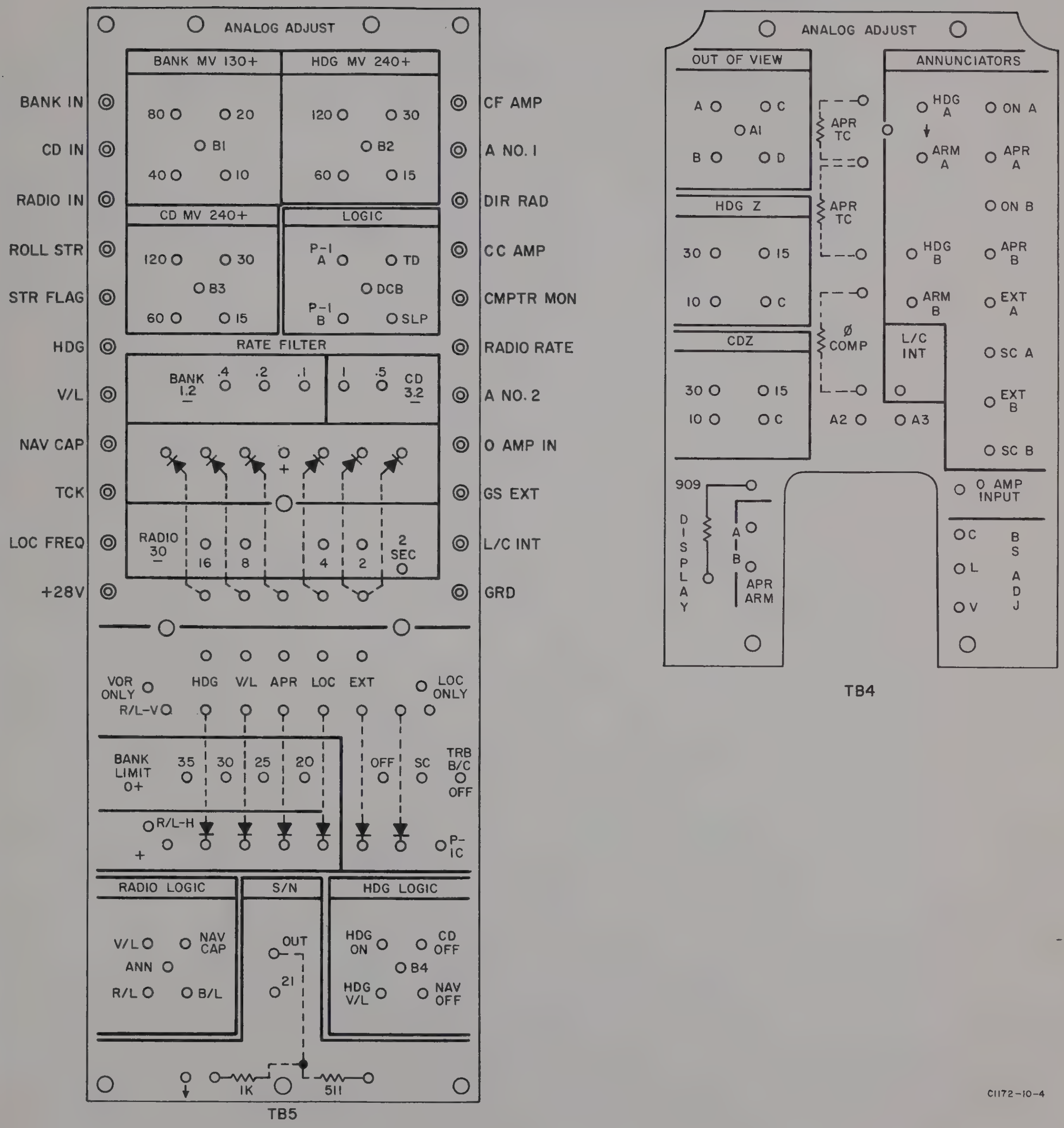

P6
FROM TB2-F
DD
26 VAC /0° HDG PWR
W
26 VAC /180° HDG PWR
Y
-5 VDC UNREG
Z
-5 VDC REG
S
+38 VDC HDG
T
-28 VDC UNREG
X
+28 VDC REG
MM
(CHASSIS GROUND)


TB5
ANALOG ADJUST
P2
BANK MV 130+
HDG MV 240+
BANK IN
CD IN
RADIO IN
CF AMP
A NO. 1
DIR RAD
CD MV 240+
LOGIC
ROLL STR
STR FLAG
CC AMP
CMPTR MON
RATE FILTER
HDG
V/L
RADIO RATE
A NO. 2
NAV CAP
TCK
O AMP IN
GS EXT
LOC FREQ
L/C INT
+28V
GRD
VOR ONLY
R/L-V
HDG V/L APR LOC EXT
LOC ONLY
BANK LIMIT 0+
TRB B/C OFF
R/L-H
P-IC
RADIO LOGIC
S/N
HDG LOGIC
NAV CAP
ANN
R/L
B/L
OUT
HDG ON
CD OFF
HDG V/L
NAV OFF
1K
511
TB4
ANALOG ADJUST
OUT OF VIEW
ANNUNCIATORS
HDG A
ON A
ARM A
APR A
APR TC
HDG Z
ON B
HDG B
APR B
ARM B
EXT A
CDZ
φ COMP
L/C INT
SC A
EXT B
SC B
O AMP INPUT
DISPLAY
APR ARM
BSADJ
C1181-05-5

562R-1 Logic Module, Wiring Diagram
Figure 809


P2
G E C A
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
H F D B
P2
E11
F16
F24
F22
F26
E19
G21
G23
H22
H24
D24
D22
E21
E23
E17
D16
H26
TB4
ANALOG ADJUST
OUT OF VIEW
A
C
A1
B
D
HDG Z
30
15
10
C
CDZ
30
15
10
C
D I S P L A Y
A
B
APR ARM
APR TC
APR TC
φ COMP
A2
A3
ANNUNCIATORS
HDG A
ON A
ARM A
APR A
ON B
HDG B
APR B
ARM B
EXT A
L/C INT
SC A
EXT B
SC B
0 AMP INPUT
C
L
V
B S A D J
P2
E1
C1
C3
E3
C19
D2
F2
D4
F4
E5
C5
F6
G19
D6
E13
D10
D14

C1181-05-5


ANALOG ADJUST
BANK MV 130+
HDG MV 240+
80
20
B1
40
10
120
30
B2
60
15
CD MV 240+
LOGIC
120
30
B3
60
15
P-1 A
TD
DCB
P-1 B
SLP
RATE FILTER
BANK 1.2
.4
.2
.1
1
.5
CD 3.2
RADIO 30
16
8
4
2
2 SEC
BANK IN
CD IN
RADIO IN
ROLL STR
STR FLAG
HDG
V/L
NAV CAP
TCK
LOC FREQ
+28V
CF AMP
A NO. 1
DIR RAD
CC AMP
CMPTR MON
RADIO RATE
A NO. 2
O AMP IN
GS EXT
L/C INT
GRD
VOR ONLY
R/L-V
HDG
V/L
APR
LOC
EXT
LOC ONLY
BANK LIMIT 0+
35
30
25
20
OFF
SC
TRB B/C OFF
R/L-H
+
P-IC
RADIO LOGIC
V/L
NAV CAP
ANN
R/L
B/L
S/N
OUT
21
HDG LOGIC
HDG ON
CD OFF
B4
HDG V/L
NAV OFF
1K
511
TB5
ANALOG ADJUST
OUT OF VIEW
A
C
A1
B
D
HDG Z
30
15
10
C
CDZ
30
15
10
C
APR TC
APR TC
Ø COMP
A2
A3
ANNUNCIATORS
HDG A
ON A
ARM A
APR A
ON B
HDG B
APR B
ARM B
EXT A
L/C INT
SC A
EXT B
SC B
O AMP INPUT
909
DISPLAY
A
B
APR ARM
C
L
V
BS ADJ
TB4
C1172-10-4

562R-1 Logic Module, Terminal Boards
Figure 810

562R-1 Roll Steering Computer - Storage Instructions

(Not Applicable)

562R-1 Roll Steering Computer - Special Tools, Fixtures, and Test Equipment

1. GENERAL.

This section lists and describes the test equipment required to test and troubleshoot the roll steering computer.

2. TEST EQUIPMENT REQUIRED.

Figure 1001 lists the test equipment required to test and troubleshoot the roll steering computer.

EQUIPMENT	MANUFACTURER'S MODEL/TYPE	PURPOSE
Steering computer test set	Collins Radio Company type 978F-5R (part number 522-3501-00) Must include service bulletins 1 - 3.	Tests the roll steering computer up to the roll steering output.
Steering computer test adapter	Collins Radio Company type 978F-10R (part number 522-4086-00)	Used with the 978F-5R.
Amplifier test set	Collins Radio Company type 978F-4A (part number 522-3427-00) Includes service bulletin 1.	Tests the roll steering computer CONVERTER and SERVOAMPLIFIER sections.
Amplifier test adapter	Collins Radio Company type 978F-9A (part number 522-4085-00) Includes service bulletin 1.	Used with the 978F-4A.
Synchro simulator	Collins Radio Company type 978F-2S (part number 522-3498-00)	Simulates feedback signals from the flight director indicator.
Voltohmmeter	Triplett Model 630	Used for continuity checks.
Vacuum tube voltmeter	Hewlett-Packard Model 400H	Used for external ac voltage measurements.
Stopwatch		Used for checking washout times.

Test Equipment Required (Sheet 1 of 2)
Figure 1001

EQUIPMENT	MANUFACTURER'S MODEL/TYPE	PURPOSE
Regulated voltage source		Supplies the following voltages for the tests: 115 ±1 volts single-phase, 400 ±5 cps; 115 ±3 volts single-phase, 60 ±0.5 cps; 28 ±3 volts dc.

Test Equipment Required (Sheet 2 of 2)
Figure 1001

3. SPECIAL TEST EQUIPMENT.

A. 978F-5R Steering Computer Test Set.

The 978F-5R Steering Computer Test Set (figure 1002) is used for testing the roll steering computer up to the roll steering output. The 978F-5R may be purchased from Collins Radio Company. When ordering, specify the Collins part number given in figure 1001. Refer to the 978F-5R instruction book for a schematic diagram and to figure 703 for information concerning interconnecting cables.

B. 978F-10R Steering Computer Test Adapter.

The 978F-10R Steering Computer Test Adapter (figure 1002) adapts the 978F-5R for testing the roll steering computer. The 978F-10R may be purchased from Collins Radio Company. When ordering, specify the Collins part number given in figure 1001. Refer to the 978F-10R instruction book for a schematic diagram and to figure 704 for information concerning interconnecting cables.

C. 978F-4A Amplifier Test Set.

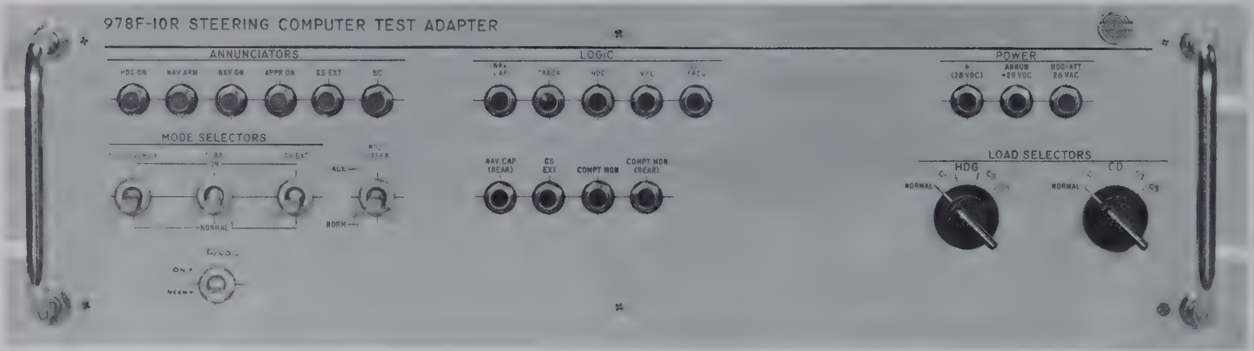
The 978F-4A Amplifier Test Set (figure 1005) is used for testing the CONVERTER and SERVOAMPLIFIER sections of the roll steering computer. The 978F-4A may be purchased from Collins Radio Company. When ordering, specify the Collins part number given in figure 1001. Refer to the 978F-4A instruction book for a schematic diagram and to figure 704 for information concerning interconnecting cables.

D. 978F-9A Amplifier Test Adapter.

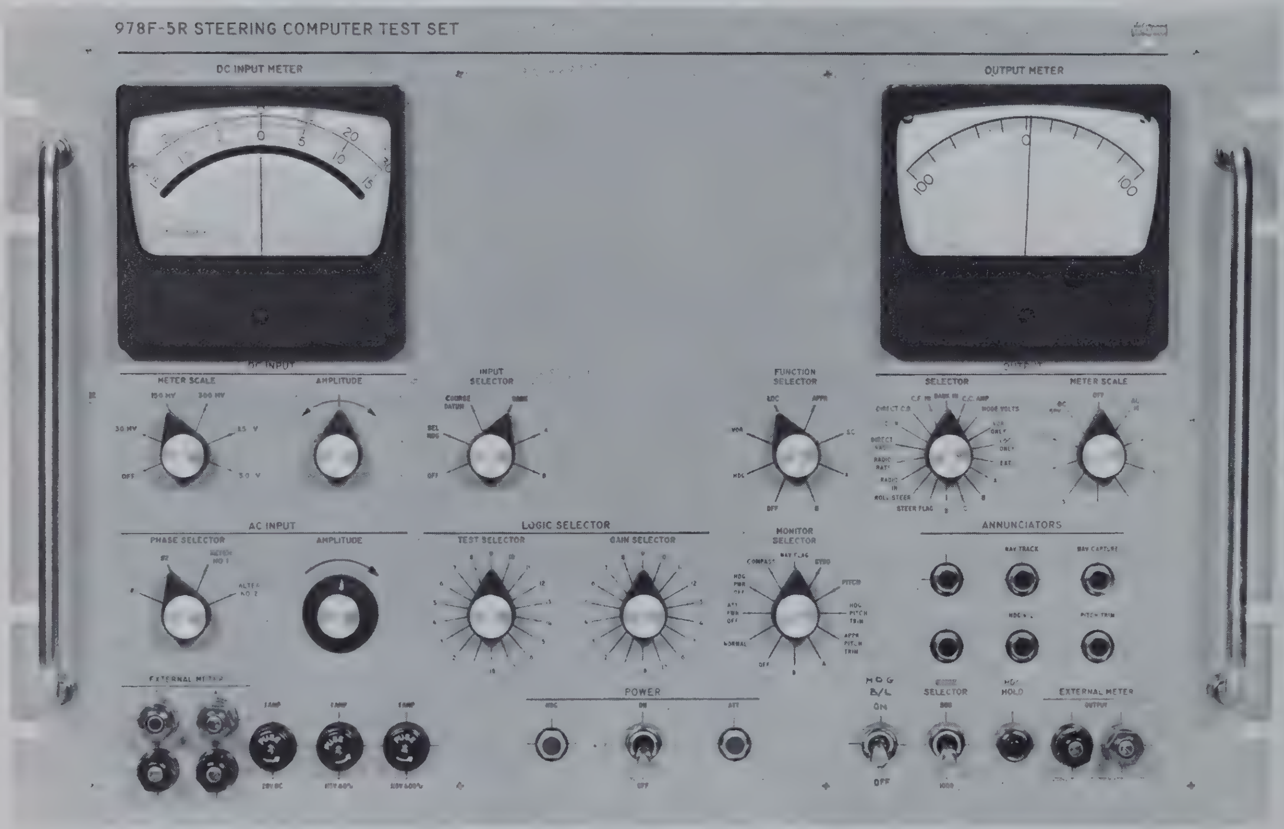
The 978F-9A Amplifier Test Adapter (figure 1005) adapts the 978F-4A for testing the roll steering computer. The 978F-9A may be purchased from Collins Radio Company. When ordering, specify the Collins part number given in figure 1001. Refer to the 978F-9A instruction book for a schematic diagram and to figure 704 for information concerning interconnecting cables.

E. 978F-2S Synchro Simulator.

The 978F-2S Synchro Simulator (figure 1005) is used in conjunction with the 978F-4A and 978F-9A to provide simulated synchro feedback signals to the roll steering computer. The 978F-2S may be purchased from Collins Radio Company. When ordering, specify the Collins part number given in figure 1001. Refer to the 978F-2S instruction book for a schematic diagram and to figure 704 for information concerning interconnecting cables.

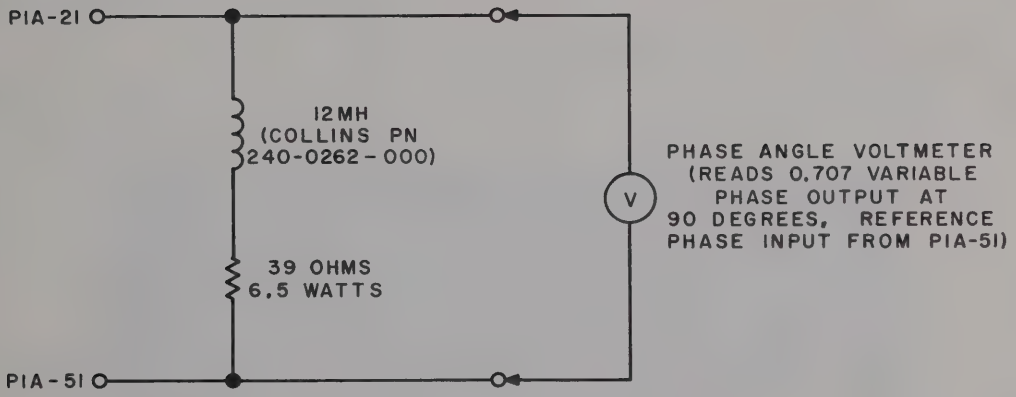

978F-10R STEERING COMPUTER TEST ADAPTER
ANNUNCIATORS
HDG ON
NAV ARM
NAV ON
APPR ON
GS EXT
SC
LOGIC
TRACK
HDG
MODE SELECTORS
NORMAL
NORM
NAV CAP (REAR)
GS EXT
COMPT MON
COMPT MON (REAR)
POWER
(28 VDC)
ANNUN +28 VDC
HDG-ATT 26 VAC
LOAD SELECTORS
HDG
CD
NORMAL

978F-10R Steering Computer Test Adapter

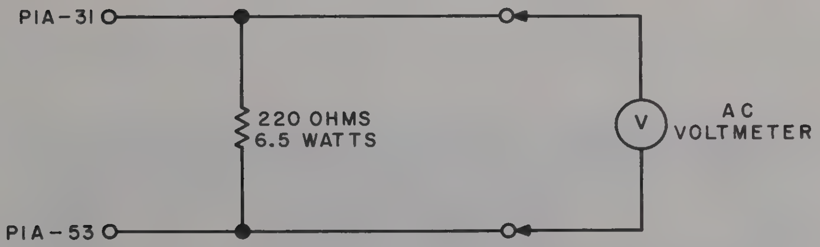

978F-5R STEERING COMPUTER TEST SET
DC INPUT METER
OUTPUT METER
0
5
10
15
20
100
0
100
DC INPUT
METER SCALE
150 MV
300 MV
30 MV
OFF
AMPLITUDE
INPUT SELECTOR
FUNCTION SELECTOR
SELECTOR
METER SCALE
AC INPUT
PHASE SELECTOR
AMPLITUDE
LOGIC SELECTOR
TEST SELECTOR
GAIN SELECTOR
MONITOR SELECTOR
ANNUNCIATORS
NAV TRACK
NAV CAPTURE
EXTERNAL METER
POWER
ON
OFF
HDG B/L
ON
OFF
SELECTOR
HDG HOLD
EXTERNAL METER
OUTPUT

978F-5R Steering Computer Test Set

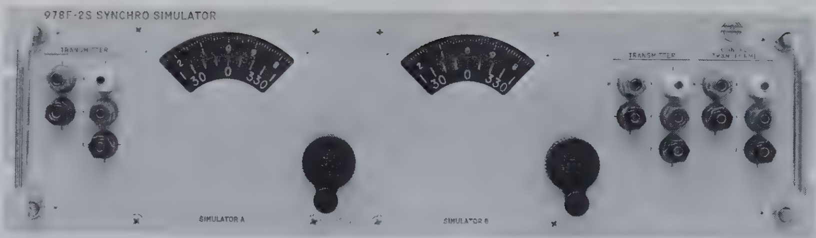
Roll Steering Test Units
Figure 1002


P1A-21
12MH
(COLLINS PN
240-0262-000)
39 OHMS
6.5 WATTS
V
PHASE ANGLE VOLTMETER
(READS 0.707 VARIABLE
PHASE OUTPUT AT
90 DEGREES, REFERENCE
PHASE INPUT FROM P1A-51)
P1A-51

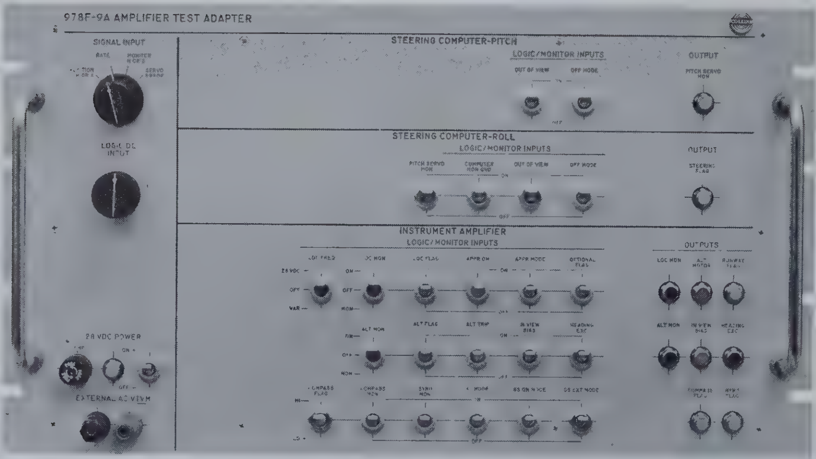
Servoamplifier Control Phase Load
Figure 1003


P1A-31
220 OHMS
6.5 WATTS
V
AC
VOLTMETER
P1A-53

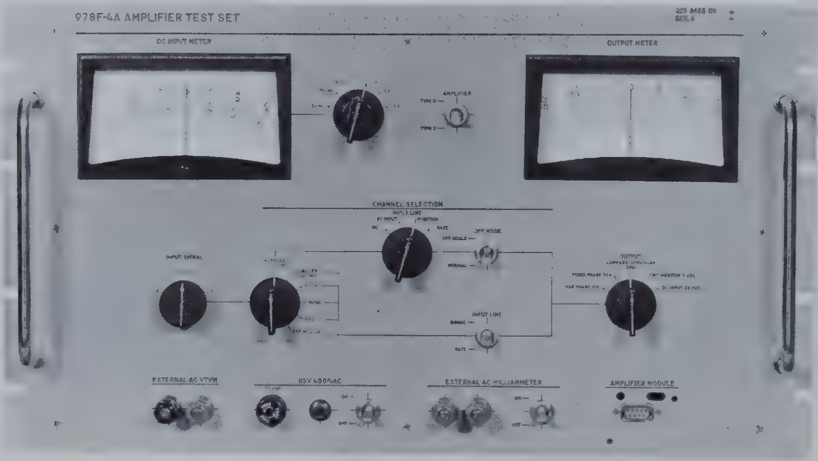
Servoamplifier Fixed Phase Load
Figure 1004


978F-2S SYNCHRO SIMULATOR
TRANSMITTER
TRANSMITTER
SIMULATOR A
SIMULATOR B

978F-2S Synchro Simulator


978F-9A AMPLIFIER TEST ADAPTER
SIGNAL INPUT
STEERING COMPUTER-PITCH
LOGIC/MONITOR INPUTS
OUTPUT
STEERING COMPUTER-ROLL
LOGIC/MONITOR INPUTS
OUTPUT
INSTRUMENT AMPLIFIER
LOGIC/MONITOR INPUTS
OUTPUTS
LOGIC DC INPUT
28 VDC POWER
EXTERNAL AC VTVM

978F-9A Amplifier Test Adapter


978F-4A AMPLIFIER TEST SET
DC INPUT METER
OUTPUT METER
AMPLIFIER
CHANNEL SELECTION
INPUT SIGNAL
OUTPUT
INPUT LIMIT
EXTERNAL AC VTVM
EXTERNAL AC MILLIAMMETER
AMPLIFIER MODULE

978F-4A Amplifier Test Set

Servochannel Test Units
Figure 1005

562R-1 Roll Steering Computer - Illustrated Parts List

INTRODUCTION

1. GENERAL.

This Illustrated Parts List is a complete list of parts for the above equipment manufactured by Collins Radio Company (see figure 1101).

Periodically the Illustrated Parts List is revised to cover additions, deletions, or changes to the equipment. These revisions are indicated by an R placed to the left of each revised item and apply to the current revision only.

2. NUMERICAL INDEX.

This index contains an alphanumerical list of all parts listed in the Group Assembly Parts List.

A. PART NUMBER Column.

In this column are listed part numbers for procurable parts and assemblies in the Group Assembly Parts List.

(1) Order of Precedence.

The order of precedence beginning at the extreme left-hand position in part number numerical arrangement is as follows:

Letters A through Z
Numerals 0 through 9 (Alphabetical O's are considered as numerical zeros.)

The order of precedence in continuing the part number arrangement in second and succeeding positions of the part number from left to right is as follows:

Space (blank column)
Diagonal (slant)/
Point (period).
Dash (-)
Letters A through Z
Numerals 0 through 9 (Alphabetical O's are considered as numerical zeros.)

(2) Collins Radio Company Part Numbering System.

Collins Radio Company part numbering system is comprised of a three-digit family number, a four-digit serial number, and a two- or three-digit dash number:

FAMILY NO.	SERIAL NO.	DASH NO.
XXX	XXXX	XX or XXX

B. AIRLINE PART NO. Column.

Intentionally left blank, for Airline use only.

C. FIG.-ITEM Column.

This column lists the Group Assembly Parts List figure and item numbers assigned to the associated part numbers.

D. TTL REQ (Total Required) Column.

Total quantity of parts or assemblies required at each location is listed in this column.

3. SYMBOL INDEX.

The symbol index enables the user to locate, by symbol, the part number and the figure and item number of any electrical item that appears on the schematic diagram.

A. SYMBOL Column.

This column contains an alphanumerical listing of all symboled items. When the same symbol appears in different units or subassemblies, module symbol prefix designators are used. Where no prefix has been assigned, separate indexes will be given. Prefix designators, if required, will be found in paragraph 7.

B. PART NUMBER Column.

This column contains the part number for all symboled items.

C. FIG.-ITEM Column.

The figure and item numbers are used to locate a part in the Group Assembly Parts List after it has been located in the Symbol Index.

4. COMMERCIAL HARDWARE LIST.

This list contains all commercially available hardware items used with the equipment.

A. PART NUMBER Column.

This column contains part numbers for commercial hardware.

B. NOMENCLATURE Column.

This column contains a description of all commercially available hardware including the type of material, dimensions, and type of finish.

5. GROUP ASSEMBLY PARTS LIST.

A. General.

The Group Assembly Parts List consists of a breakdown of the complete unit into subassemblies and detailed parts. Each assembly is listed in its order of disassembly and is followed immediately by its component parts properly indented to show their relationship to the assembly.

(1) FIG.-ITEM Column.

Figure and item numbers key the parts breakdown to the applicable illustration. Items in the parts breakdown preceded by a dash (example -1) will not be keyed on the illustration.

(2) PART NO. Column.

Part numbers listed are MIL part numbers, vendor part numbers, or Collins part numbers.

(3) Proprietary Items.

Proprietary items are coded P and appear in the nomenclature column.

(4) NOMENCLATURE Column.

In this column are listed each assembly, subassembly, sub-subassembly, a reference to its next higher assembly (NHA), and their attaching parts; attaching parts are listed immediately following the parts which they attach. Items which are made from raw stock, such as cut lengths of wire, solder, varnish, lacing cord, and flexible tubing are not included in the Group Assembly Parts List.

If a part is purchased by Collins Radio Company from a vendor, the Federal Manufacturer's Code number, preceded by the letter V, is listed in this column. The vendor's part number will be listed in the part number column, and the Collins part number will appear in the nomenclature column. If this column does not include a Federal Manufacturer's Code number, the part number listed is a Collins part number. The vendor's name and address are indicated in paragraph 6. Symbol designations, where applicable, will be listed following the Collins part number. Serial number or MCN (manufacturing control number) effectivities, where applicable, are listed following the last item in this column. Serial number effectivities are designated on nameplates. The MCN is stamped on each module and/or chassis. This Illustrated Parts List reflects changes made by field service bulletins. Notices of such changes are added at the end of the description in the nomenclature column.

(5) USAGE CODE Column.

Part variations within different models of the same equipment are indicated in the usage code column. In cases where this column has been left blank, the part listed will apply to all models of equipment covered by this publication. If usage codes are required, see paragraph 7.

(6) UNITS PER ASSY. Column.

This column contains the number of parts required for each assembly or subassembly. The letters AR denote that the selection of a part or parts should be made as required. REF refers to an assembly which is completely assembled on a preceding illustration.

INTRODUCTION

6. VENDOR'S CODE AND NAME INDEX

CODE	VENDOR'S NAME AND ADDRESS
02660	Amphenol Corp. 2801 S. 25th Ave. Broadview, Ill. 60153
04713	Motorola Semiconductor Products, Inc. 5005 E. McDowell Rd. Phoenix, Ariz. 85008
07896	Jadaro Machine Products 325 S. Shiloh Rd Garland Tex. 75040
07933	Raytheon Co. Components Div. Semiconductor Operation 350 Ellis Street Mountain View, Calif. 94042
08289	Blinn Delbert Co., Inc., The 1678 E. 5th Ave. Pomona, Calif. 91769
12014	Chicago Rivet and Machine Co. 950 S. 25th Ave. Bellwood, Ill. 60104
12615	U.S. Terminals, Inc. 7504 Camargo Cincinnati, Ohio 45243
13103	Thermalloy Co. 8717 Diplomacy Row Dallas, Tex. 75247
21242	American Electronics Components Corp. P.O. Box 27087 Cincinnati, Ohio 45200
56289	Sprague Electric Co. North Adams, Mass 01247
71468	ITT Cannon Electric, Inc. 3208 Humbolt St. Los Angeles, Calif. 90031
72962	Elastic Stop Nut Corp. of America 2330 Vauxhall Rd. Union, N.J. 07083
77147	Patton MacGuyer Co. Edgewood Station Providence, R.I. 02900
77250	Pheoll Mfg. Co. Chicago, Ill. 60600
78189	Shakeproof Div. of Illinois Tool Works, Inc. St. Charles Rd. Elgin, Ill. 60120
80223	United Transformer Co. 150 Varick St. New York, N.Y. 10000
81312	Winchester Electronics Div. Litton Industries, Inc. Main St. and Hillside Ave. Oakville, Conn. 06779
81483	International Rectifier Corp. 1523 E. Grand Ave. El Sequndo, Calif. 90245
91314	Lewis Spring and Mfg. Co. 2652 W. North Ave. Chicago, Ill. 60647
91500	Asheville - Schoonmaker Mica Co. 910 Jefferson Ave. Newport News, Va. 23600
91506	Augat, Inc. 33 Perry Ave. Attleboro, Mass. 02703
91637	Dale Electronics, Inc. P.O. Box 609 Columbus, Nebr. 68601

INTRODUCTION

6. VENDOR'S CODE AND NAME INDEX

CODE	VENDOR'S NAME AND ADDRESS
93108	Duralith Corp. 1025 Race Philadelphia, Pa. 19107
96256	Thordarson - Meissner, Inc. Electronic Center Mt. Carmel, Ill. 62863
97315	Ballastran Corp. 1701 N. Calhoun St. Fort Wayne, Ind. 46800
98291	Sealectro Corp. 225 Hoyt Mamaroneck, N.Y. 10544
98978	International Electronic Research Corp. 151 W. Magnolia Ave. Burbank, Calif. 91502

7. TABLE I.

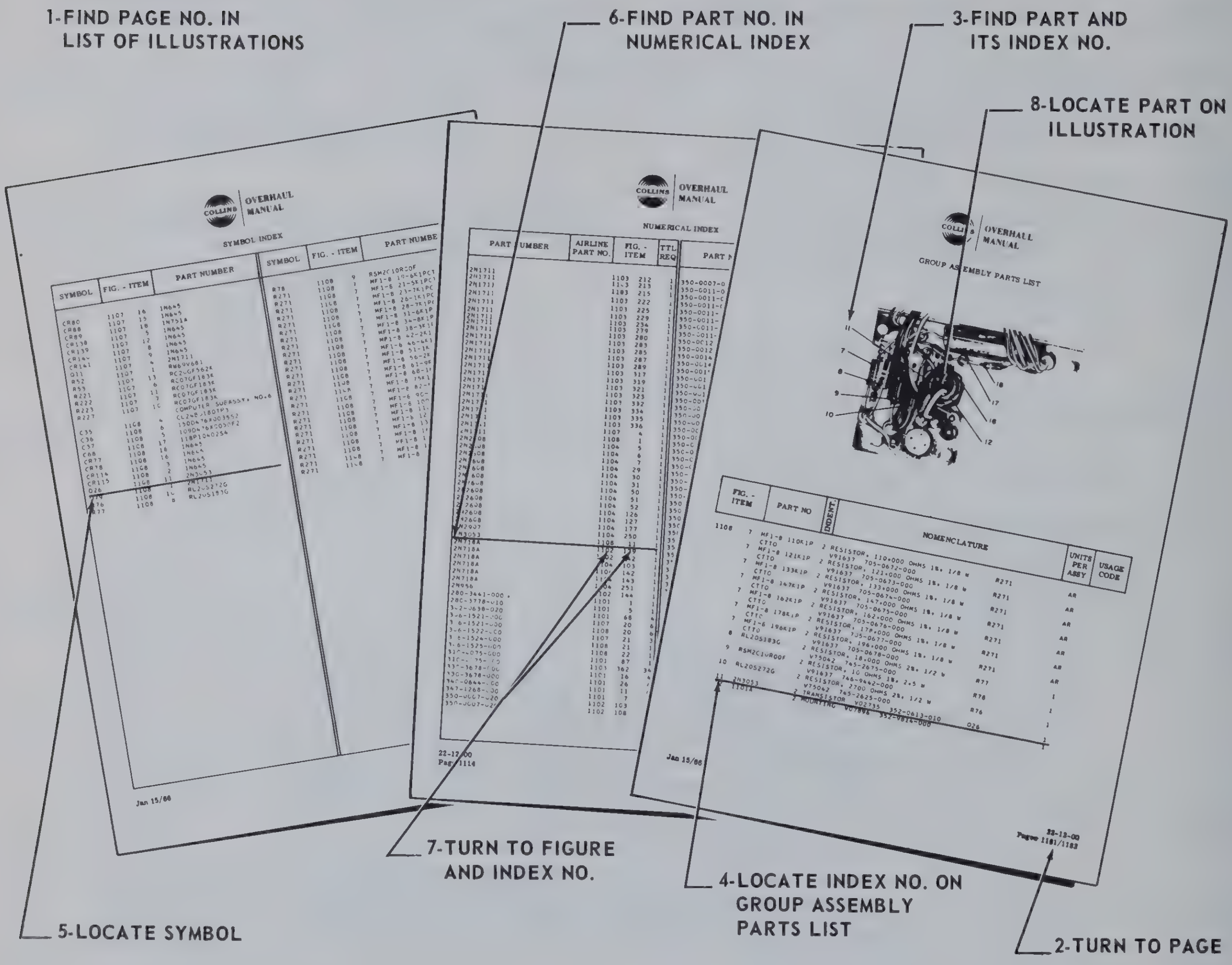
A. Usage Code.

The following codes have been assigned in this manual:

USAGE CODE	UNIT	FIGURE
A	562R-1 Roll Steering Computer 522-3713-001	1101
B	562R-1 Roll Steering Computer 522-3713-003	1101
C	562R-1 Roll Steering Computer 522-3713-005	1101
D	562R-1 Roll Steering Computer 522-3713-006	1101
E	562R-1 Roll Steering Computer 522-3713-007	1101
F	562R-1 Roll Steering Computer 522-3713-009	1101
G	562R-1 Roll Steering Computer 522-3713-011	1101
H	562R-1 Roll Steering Computer 522-3713-012	1101
J	562R-1 Roll Steering Computer 522-3713-015	1101
K	562R-1 Roll Steering Computer 522-3713-017	1101
L	562R-1 Roll Steering Computer 522-3713-021	1101

INTRODUCTION

How to Use This Illustrated Parts List


1-FIND PAGE NO. IN LIST OF ILLUSTRATIONS
6-FIND PART NO. IN NUMERICAL INDEX
3-FIND PART AND ITS INDEX NO.
8-LOCATE PART ON ILLUSTRATION
7-TURN TO FIGURE AND INDEX NO.
4-LOCATE INDEX NO. ON GROUP ASSEMBLY PARTS LIST
5-LOCATE SYMBOL
2-TURN TO PAGE

HOW TO FIND THE PART NUMBER IF THE SECTION OR SYSTEM OF THE EQUIPMENT IN WHICH THE PART IS USED IS KNOWN:

(1) Turn to the List of Illustrations and find the page number for the Major Assembly or System in which the part is used.

(2) Turn to the page determined in step (1).

(3) Locate the part and its index number on the illustration.

(4) Find the index number on the Group Assembly Parts List page to determine complete description.

(5) If the reference designation symbol is known, refer to the Symbol Index to find the part number.

HOW TO FIND THE ILLUSTRATION FOR A PART IF THE PART NUMBER IS KNOWN:

(6) Refer to the Numerical Index and find the part number.

(7) Turn to the Group Assembly Parts List and find the first figure and index number indicated in the Numerical Index for that part. If this figure shows the part in a section or system of the equipment other than the one desired, refer to the other figure numbers listed in the Numerical Index.

(8) On the face of the illustration, find the index number determined in step (7).

NUMERICAL INDEX

PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
BC3256	1103 126	1	
BC3257	1101 66	1	
BC3255	1103 142	1	
BC3255	1103 186	1	
BC3255	1103 92	1	
BC3255	1104 97	1	
BC3255	1104 164	1	
CK06CW103M	1103 214	1	
CK06CW103M	1104 61A	1	
CK06CW103M	1104 129A	1	
CK06CW103M	1104 171	1	
CK06CW103M	1104 183	1	
CK06CW103M	1104 211	1	
CK06CW103M	1105 289A	1	
CL24BJ180TP3	1105 289	1	
CL27BE400UN3	1104 174	1	
CL27BL060TN3	1104 132	1	
CL27BL1R5TN3	1105 252	1	
CL27BL1R5TN3	1105 253	1	
CM05E510J03	1103 131	1	
CM05E510J03	1103 171	1	
CM05E510J03	1103 205	1	
CM05E510J03	1103 101	1	
CM05E510J03	1104 110	1	
CM05E510J03	1104 153	1	
CM05E510J03	1104 197	1	
CM05E510J03	1104 203	1	
CM05E510J03	1104 251	1	
CM05F121J03	1105 260A	1	
CM06F11J03	1104 139	1	
DH226	1103 159A	1	
DH226	1103 189	1	
DH226	1103 63	1	
DH226	1104 26	1	
DH226	1105 248	1	
DP420-231WHT	1102 61	8	
DRX2-57P57P34B02	1101 70	1	
ER490	1104 172	1	
F12NCFMA1-62	1101 74	1	
F22NCFMA1-26	1103 265A	8	
F22NCFMA1-26	1104 268B	8	
F22NCFMA1-26	1105 391A	8	
F22NCFMA2-40	1101 27	2	
F22NM107-62	1101 13	2	
MF1-4 1000K1PCTTO	1103 16	1	
MF1-4 1000K1PCTTO	1103 17	1	
MF1-4 1470K1PCTTO	1104 23	1	
MF1-4 1960K1PCTTO	1104 232	1	
MF1-4 383K1PCTTO	1104 233	1	
MF1-4 562K1PCTTO	1103 44	1	
MF1-4 909K1PCTTO	1103 43	1	
MF1-8 1K1PCTTO	1103 107	1	
MF1-8 1K1PCTTO	1103 163	1	
MF1-8 10K1PCPCTTO	1103 183	1	
MF1-8 10K1PCTTO	1104 59	1	
MF1-8 10K1PCTTO	1104 156	1	
MF1-8 10K1PCTTO	1104 173	1	

PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
MF1-8 10K1PCTTO	1104 240	1	
MF1-8 10K1PCTTO	1104 257	1	
MF1-8 10K1PCTTO	1105 90	1	
MF1-8 10K1PCTTO	1105 243	1	
MF1-8 10K1PCTTO	1105 265	1	
MF1-8 10K1PCTTO	1105 278	1	
MF1-8 10K1PCTTO	1105 280	1	
MF1-8 10R00FTO	1103 114	1	
MF1-8 100K1PCTTO	1103 199	1	
MF1-8 100K1PCTTO	1103 200	1	
MF1-8 100K1PCTTO	1103 232	1	
MF1-8 100K1PCTTO	1103 236	1	
MF1-8 100K1PCTTO	1104 89	1	
MF1-8 100K1PCTTO	1105 79	1	
MF1-8 100K1PCTTO	1105 293	AR	
MF1-8 10003FTO	1103 241	1	
MF1-8 11K1PCTTO	1103 154	1	
MF1-8 110K1PCTTO	1103 40	1	
MF1-8 110K1PCTTO	1105 293	AR	
MF1-8 11000FTO	1103 113	AR	
MF1-8 121K1PCTTO	1103 31	1	
MF1-8 121K1PCTTO	1103 33	1	
MF1-8 121K1PCTTO	1103 97	1	
MF1-8 121K1PCTTO	1105 293	AR	
MF1-8 133K1PCTTO	1103 158	1	
MF1-8 133K1PCTTO	1103 179	1	
MF1-8 133K1PCTTO	1104 77	1	
MF1-8 133K1PCTTO	1105 293	AR	
MF1-8 14-7K1PCTTO	1103 185	1	
MF1-8 14-7K1PCTTO	1103 162	1	
MF1-8 14-7K1PCTTO	1104 214	1	
MF1-8 14-7K1PCTTO	1104 218	1	
MF1-8 14-7K1PCTTO	1105 279	1	
MF1-8 14-7K1PCTTO	1105 282	1	
MF1-8 147K1PCTTO	1104 93	1	
MF1-8 147K1PCTTO	1104 105	1	
MF1-8 147K1PCTTO	1105 293	AR	
MF1-8 16-2K1PCTTO	1103 182	1	
MF1-8 162K1PCTTO	1104 256	1	
MF1-8 162K1PCTTO	1105 293	AR	
MF1-8 178K1PCTTO	1105 293	AR	
MF1-8 19-6K1PCTTO	1103 68	1	
MF1-8 19-6K1PCTTO	1103 108	1	
MF1-8 19-6K1PCTTO	1104 101	1	
MF1-8 19-6K1PCTTO	1104 117	1	
MF1-8 19-6K1PCTTO	1105 293	AR	
MF1-8 196K1PCTTO	1105 293	AR	
MF1-8 2-15K1PCTTO	1104 127	1	
MF1-8 2-15K1PCTTO	1105 229	1	
MF1-8 2-15K1PCTTO	1105 262	1	
MF1-8 2-61K1PCTTO	1105 104	1	
MF1-8 21-5K1PCTTO	1104 62	1	
MF1-8 215K1PCTTO	1104 187	1	
MF1-8 215K1PCTTO	1104 191	1	
MF1-8 23-7K1PCTTO	1103 155	1	
MF1-8 23-7K1PCTTO	1103 178	1	
MF1-8 23-7K1PCTTO	1104 29A	1	

NUMERICAL INDEX

PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
MF1-8 23-7K1PCTTO	1104 107	1	
MF1-8 23-7K1PCTTO	1105 293	AR	
MF1-8 237K1PCTTO	1103 27	1	
MF1-8 237K1PCTTO	1103 29	1	
MF1-8 237K1PCTTO	1104 38	1	
MF1-8 237K1PCTTO	1104 39	1	
MF1-8 26-1K1PCTTO	1104 217	1	
MF1-8 26-1K1PCTTO	1105 293	AR	
MF1-8 261K1PCTTO	1102 6	1	
MF1-8 261K1PCTTO	1105 78	1	
MF1-8 27401FTO	1103 178	1	
MF1-8 28-7K1PCTTO	1102 7	1	
MF1-8 28-7K1PCTTO	1104 66	1	
MF1-8 28-7K1PCTTO	1105 293	AR	
MF1-8 287K1PCTTO	1103 41	1	
MF1-8 287K1PCTTO	1103 159	1	
MF1-8 287K1PCTTO	1104 106	1	
MF1-8 3-16K1PCTTO	1102 8	1	
MF1-8 3-16K1PCTTO	1104 239	1	
MF1-8 3-48K1PCTTO	1102 10	1	
MF1-8 31-6K1PCTTO	1103 181	1	
MF1-8 31-6K1PCTTO	1105 277	1	
MF1-8 31-6K1PCTTO	1105 281	1	
MF1-8 31-6K1PCTTO	1105 293	AR	
MF1-8 316K1PCTTO	1103 39	1	
MF1-8 34-8K1PCTTO	1103 217	1	
MF1-8 34-8K1PCTTO	1103 135	1	
MF1-8 34-8K1PCTTO	1103 156	1	
MF1-8 34-8K1PCTTO	1105 293	AR	
MF1-8 348K1PCTTO	1103 45	1	
MF1-8 348K1PCTTO	1104 186	1	
MF1-8 348K1PCTTO	1104 192	1	
MF1-8 36501FTO	1104 100	1	
MF1-8 38-3K1PCTTO	1103 217	1	
MF1-8 38-3K1PCTTO	1104 103	1	
MF1-8 38-3K1PCTTO	1105 293	AR	
MF1-8 383K1PCTTO	1103 46	1	
MF1-8 4-22K1PCTTO	1105 230	1	
MF1-8 40202FTO	1103 263	1	
MF1-8 42-2K1PCTTO	1103 206	1	
MF1-8 42-2K1PCTTO	1103 208	1	
MF1-8 42-2K1PCTTO	1103 210	1	
MF1-8 42-2K1PCTTO	1103 148	1	
MF1-8 42-2K1PCTTO	1104 78	1	
MF1-8 42-2K1PCTTO	1104 157	1	
MF1-8 42-2K1PCTTO	1104 167	1	
MF1-8 42-2K1PCTTO	1105 293	AR	
MF1-8 422K1PCTTO	1103 38	1	
MF1-8 422R0FTO	1104 144	1	
MF1-8 46-4K1PCTTO	1104 161	1	
MF1-8 46-4K1PCTTO	1105 293	AR	
MF1-8 46402FTO	1103 21	1	
MF1-8 46402FTO	1103 23	1	
MF1-8 48700FTO	1104 143	1	
MF1-8 48702FTO	1103 251	1	
MF1-8 5-11K1PCTTO	1102 8	1	
MF1-8 5-62K1PCTTO	1102 9	1	
MF1-8 5-62K1PCTTO	1104 146	1	
MF1-8 5-62K1PCTTO	1104 175	1	
MF1-8 51-1K1PCTTO	1105 293	AR	
MF1-8 511R0FTO	1102 24	1	
MF1-8 511R0FTO	1103 113	AR	
MF1-8 511R0FTO	1104 19	1	
MF1-8 56-2K1PCTTO	1104 102	1	
MF1-8 56-2K1PCTTO	1105 293	AR	
MF1-8 562K1PCTT7	1104 19	1	
MF1-8 56202FTO	1103 250	1	
MF1-8 6-19K1PCTTO	1103 209	1	
MF1-8 6-19K1PCTTO	1103 216	1	
MF1-8 6-19K1PCTTO	1103 118	1	
MF1-8 6-19K1PCTTO	1103 119	1	
MF1-8 6-19K1PCTTO	1104 206	1	
MF1-8 6-19K1PCTTO	1104 220	1	
MF1-8 61-9K1PCTTO	1103 177	1	
MF1-8 61-9K1PCTTO	1105 293	AR	
MF1-8 619R0FTO	1103 113	AR	
MF1-8 61902FTO	1103 42	1	
MF1-8 68-1K1PCTTO	1103 157	1	
MF1-8 68-1K1PCTTO	1103 180	1	
MF1-8 68-1K1PCTTO	1105 241	1	
MF1-8 68-1K1PCTTO	1105 293	AR	
MF1-8 75K1PCTTO	1104 77	1	
MF1-8 75K1PCTTO	1104 104	1	
MF1-8 75K1PCTTO	1105 293	AR	
MF1-8 750R0FTO	1103 113	AR	
MF1-8 8-11K1PCTTO	1104 17	1	
MF1-8 8-11K1PCTTO	1104 35A	1	
MF1-8 8-11K1PCTTO	1105 238A	1	
MF1-8 8-11K1PCTTO	1105 246	1	
MF1-8 8-11K1PCTTO	1105 250	1	
MF1-8 8-25K1PCTTO	1103 204	1	
MF1-8 8-25K1PCTTO	1103 103	1	
MF1-8 8-25K1PCTTO	1103 129	1	
MF1-8 8-25K1PCTTO	1103 170	1	
MF1-8 8-25K1PCTTO	1104 113	1	
MF1-8 8-25K1PCTTO	1104 143	1	
MF1-8 8-25K1PCTTO	1104 149	1	
MF1-8 8-25K1PCTTO	1104 158	1	
MF1-8 8-25K1PCTTO	1104 195	1	
MF1-8 8-25K1PCTTO	1104 201	1	
MF1-8 8-25K1PCTTO	1104 248	1	
MF1-8 8-25K1PCTTO	1105 233	1	
MF1-8 8-25K1PCTTO	1105 270	1	
MF1-8 82-5K1PCTTO	1104 89	1	
MF1-8 82-5K1PCTTO	1104 93	1	
MF1-8 82-5K1PCTTO	1105 54	1	
MF1-8 82-5K1PCTTO	1105 293	AR	
MF1-8 9-09K1PCTTO	1104 241	1	
MF1-8 90-9K1PCTTO	1103 102	1	
MF1-8 90-9K1PCTTO	1103 130	1	
MF1-8 90-9K1PCTTO	1103 173	1	
MF1-8 90-9K1PCTTO	1104 111	1	
MF1-8 90-9K1PCTTO	1104 141	1	
MF1-8 90-9K1PCTTO	1104 150	1	

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PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
MF1-8 90-9K1PCTTO	1104 177	1	
MF1-8 90-9K1PCTTO	1104 182	1	
MF1-8 90-9K1PCTTO	1104 196	1	
MF1-8 90-9K1PCTTO	1104 202	1	
MF1-8 90-9K1PCTTO	1104 250	1	
MF1-8 90-9K1PCTTO	1105 242	1	
MF1-8 90-9K1PCTTO	1105 271	1	
MF1-8 90-9K1PCTTO	1105 293	AR	
MF1-8 909R0FTO	1103 113	AR	
MF4-8 21-5K1PCTTO	1104 70	1	
MF4-8 21-5K1PCTTO	1105 293	AR	
MM2186	1103 74	1	
MM2186	1103 77	1	
MM2186	1104 126	1	
MM2186	1105 275	1	
MM2186	1105 327	1	
MM2186	1105 338	1	
MM2186	1105 362	1	
MM2186	1105 370	1	
MM2186	1105 381	1	
MM2186	1105 66	1	
MM2186	1105 83	1	
MM2186	1105 93	1	
MM2186	1105 102	1	
MM2186	1105 139	1	
MM2186	1105 155	1	
MM2187	1104 126	1	
MS17821-4-9	1101 11A	18	
MS17821-4-9	1103 273A	8	
MS17821-4-9	1104 268A	7	
MS35338-77	1102 21	2	
MS35338-78	1101 26	4	
MS35338-78	1101 35	10	
MS35338-78	1102 5	4	
MS35338-78	1102 14	4	
MS35338-78	1104 5	3	
MS51957-12	1102 13	4	
MS51957-13	1101 33	4	
MS51957-13	1103 144	2	
MS51957-13	1103 188	2	
MS51957-13	1103 94	2	
MS51957-13	1103 128	2	
MS51957-13	1104 99	2	
MS51957-13	1104 166	2	
MS51957-15	1101 8	2	
MS51957-15	1101 25	4	
MS51957-15	1101 34	2	
MS51957-15	1105 4	3	
MS51957-17	1101 32	2	
MS51957-17	1103 1	6	
MS51957-17	1105 284C	4	
MS51957-19	1104 1	6	
MS51957-27	1101 11	1	
MS51957-3	1101 45	8	
MS51957-5	1101 18	2	
MS51957-5	1101 41	16	
MS51959-12	1101 52	4	
MS51959-12	1101 54	4	
MS51959-12	1101 56	3	
MS51959-13	1101 23	1	
MS51959-15	1101 47	4	
MS51957-10	1102 20	2	
MS51957-12	1102 4	4	
MW250-125	1104 126C	4	
M51-4 1K1PCTTO	1105 258	1	
M51-4 1K1PCTTO	1105 259	1	
P313-0051-000	1103 13	1	
P313-0051-000	1104 13	1	
P313-0051-000	1105 314	1	
P313-0050-000	1101 62	1	
P330-2250-000	1104 137	2	
P330-2250-000	1105 171	2	
P330-2250-000	1105 200	2	
P330-2250-000	1105 213	2	
P330-2250-000	1105 285A	2	
P330-2291-000	1101 50	5	
P330-2292-000	1101 72	4	
P330-2294-000	1101 69	4	
P330-2290-000	1101 24	2	
P342-0143-000	1101 65	1	
P342-0152-000	1101 60	1	
P343-0016-000	1104 4	3	
P343-0285-000	1103 15	1	
P343-0285-000	1104 15	1	
P343-0285-000	1105 316	1	
P343-2642-000	1103 4	3	
P347-0001-000	1103 11	8	
P347-0001-000	1104 11	8	
P347-1268-000	1101 2	2	
P347-1268-000	1101 4	2	
RC07F103K	1103 138	1	
RC07F103K	1103 145	1	
RC07F103K	1103 146	1	
RC07F103K	1103 227	1	
RC07F103K	1103 229	1	
RC07F103K	1103 244	1	
RC07F103K	1103 245	1	
RC07F103K	1103 247	1	
RC07F103K	1103 255	1	
RC07F103K	1103 256	1	
RC07F103K	1103 262	1	
RC07F103K	1103 19	1	
RC07F103K	1103 24	1	
RC07F103K	1103 25	1	
RC07F103K	1103 26	1	
RC07F103K	1103 32	1	
RC07F103K	1103 47	1	
RC07F103K	1103 48	1	
RC07F103K	1103 55	1	
RC07F103K	1103 56	1	
RC07F103K	1104 32	1	
RC07F103K	1104 37	1	
RC07F103K	1104 44	1	
RC07F103K	1104 46	1	

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PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
RC07F103K	1104 50	1	
RC07F103K	1104 71	1	
RC07F103K	1104 73	1	
RC07F103K	1104 81	1	
RC07F103K	1104 64	1	
RC07F103K	1104 82	1	
RC07F103K	1104 85	1	
RC07F103K	1104 95	1	
RC07F103K	1104 118	1	
RC07F103K	1104 189	1	
RC07F103K	1104 221	1	
RC07F103K	1104 226	1	
RC07F103K	1104 254	1	
RC07F103K	1104 263	1	
RC07F103K	1104 266	1	
RC07F103K	1105 7	1	
RC07F103K	1105 10	1	
RC07F103K	1105 36	1	
RC07F103K	1105 42	1	
RC07F103K	1105 63	1	
RC07F103K	1105 64	1	
RC07F103K	1105 84	1	
RC07F103K	1105 87	1	
RC07F103K	1105 94	1	
RC07F103K	1105 95	1	
RC07F103K	1105 105	1	
RC07F103K	1105 132	1	
RC07F103K	1105 137	1	
RC07F103K	1105 148	1	
RC07F103K	1105 153	1	
RC07F103K	1105 167	1	
RC07F103K	1105 173	1	
RC07F103K	1105 180	1	
RC07F103K	1105 189	1	
RC07F103K	1105 205	1	
RC07F103K	1105 217	1	
RC07GF102K	1105 324	1	
RC07GF102K	1105 337	1	
RC07GF102K	1105 346	1	
RC07GF102K	1105 360	1	
RC07GF102K	1105 375	1	
RC07GF102K	1105 382	1	
RC07GF102K	1105 179	1	
RC07GF102K	1105 187	1	
RC07GF102K	1105 193	1	
RC07GF102K	1105 202	1	
RC07GF102K	1105 208	1	
RC07GF102K	1105 218	1	
RC07GF104K	1103 236	1	
RC07GF104K	1103 82	1	
RC07GF104K	1103 83	1	
RC07GF104K	1104 31	1	
RC07GF105K	1104 212	1	
RC07GF122K	1105 117	1	
RC07GF122K	1105 120	1	
RC07GF153K	1103 137	1	
RC07GF153K	1103 242	1	
RC07GF153K	1103 248	1	
RC07GF153K	1103 58	1	
RC07GF153K	1103 252	1	
RC07GF153K	1103 259	1	
RC07GF153K	1103 260	1	
RC07GF153K	1103 18	1	
RC07GF153K	1103 20	1	
RC07GF153K	1103 30	1	
RC07GF153K	1103 35	1	
RC07GF153K	1103 49	1	
RC07GF153K	1103 52	1	
RC07GF153K	1103 53	1	
RC07GF153K	1103 59	1	
RC07GF153K	1103 73	1	
RC07GF153K	1103 78	1	
RC07GF153K	1104 43	1	
RC07GF153K	1104 96	1	
RC07GF153K	1104 188	1	
RC07GF153K	1104 223	1	
RC07GF153K	1104 224	1	
RC07GF153K	1104 258	1	
RC07GF153K	1104 260	1	
RC07GF153K	1104 262	1	
RC07GF153K	1105 13	1	
RC07GF153K	1105 31	1	
RC07GF153K	1105 49	1	
RC07GF153K	1105 52	1	
RC07GF153K	1105 80	1	
RC07GF153K	1105 81	1	
RC07GF153K	1105 82	1	
RC07GF153K	1105 106	1	
RC07GF153K	1105 136	1	
RC07GF153K	1105 145	1	
RC07GF153K	1105 146	1	
RC07GF153K	1105 147	1	
RC07GF153K	1105 154	1	
RC07GF153K	1105 159	1	
RC07GF153K	1105 160	1	
RC07GF153K	1105 162	1	
RC07GF153K	1105 163	1	
RC07GF154K	1103 232	1	
RC07GF155K	1103 251	1	
RC07GF182K	1105 134	1	
RC07GF183K	1104 61	1	
RC07GF183K	1105 101	1	
RC07GF183K	1105 108	1	
RC07GF221K	1104 124	1	
RC07GF222K	1104 123	1	
RC07GF222K	1104 131	1	
RC07GF222K	1104 140	1	
RC07GF222K	1104 219	1	
RC07GF223K	1105 220	1	
RC07GF223K	1105 320	1	
RC07GF223K	1105 334	1	
RC07GF223K	1105 350	1	
RC07GF223K	1105 357	1	
RC07GF223K	1105 372	1	

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PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
RC07GF223K	1105 386	1	
RC07GF223K	1105 177	1	
RC07GF223K	1105 185	1	
RC07GF223K	1105 195	1	
RC07GF223K	1105 197	1	
RC07GF223K	1105 209	1	
RC07GF224K	1105 59	1	
RC07GF225K	1103 152	1	
RC07GF225K	1103 219	1	
RC07GF271K	1105 89	1	
RC07GF272K	1105 319	1	
RC07GF272K	1105 333	1	
RC07GF272K	1105 351	1	
RC07GF272K	1105 356	1	
RC07GF272K	1105 369	1	
RC07GF272K	1105 388	1	
RC07GF273K	1104 20	1	
RC07GF273K	1104 31	1	
RC07GF273K	1104 49	1	
RC07GF273K	1104 56	1	
RC07GF273K	1104 66	1	
RC07GF273K	1104 178	1	
RC07GF273K	1104 227	1	
RC07GF273K	1104 234	1	
RC07GF273K	1105 27	1	
RC07GF273K	1105 35	1	
RC07GF273K	1105 56	1	
RC07GF273K	1105 57	1	
RC07GF273K	1105 68	1	
RC07GF273K	1105 74	1	
RC07GF273K	1105 99	1	
RC07GF273K	1105 103	1	
RC07GF273K	1105 107	1	
RC07GF273K	1105 129	1	
RC07GF274K	1104 238	1	
RC07GF332K	1105 255	1	
RC07GF391K	1103 122	1	
RC07GF472K	1104 119	1	
RC07GF472K	1105 321	1	
RC07GF472K	1105 322	1	
RC07GF472K	1105 335	1	
RC07GF472K	1105 336	1	
RC07GF472K	1105 347	1	
RC07GF472K	1105 349	1	
RC07GF472K	1105 358	1	
RC07GF472K	1105 359	1	
RC07GF472K	1105 373	1	
RC07GF472K	1105 374	1	
RC07GF472K	1105 383	1	
RC07GF472K	1105 384	1	
RC07GF472K	1105 178	1	
RC07GF472K	1105 186	1	
RC07GF472K	1105 194	1	
RC07GF472K	1105 196	1	
RC07GF472K	1105 207	1	
RC07GF472K	1105 219	1	
RC07GF473K	1103 75	1	

PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
RC07GF473K	1103 76	1	
RC07GF473K	1103 80	1	
RC07GF473K	1103 85	1	
RC07GF473K	1104 35	1	
RC07GF474K	1103 213	1	
RC07GF474K	1103 215	1	
RC07GF563K	1105 60	1	
RC07GF565K	1104 209	1	
RC07GF565K	1104 210	1	
RC07GF560K	1105 309	1	
RC07GF682K	1104 56	1	
RC07GF823K	1104 30	1	
RC07GF824K	1105 57A	1	
RC20GF103K	1103 69	1	
RC20GF103K	1103 70	1	
RC20GF103K	1103 91	1	
RC20GF103K	1104 45	1	
RC20GF103K	1105 24	1	
RC20GF123K	1104 51	1	
RC20GF272K	1103 168	1	
RC20GF272K	1103 191	1	
RC20GF272K	1103 193	1	
RC20GF272K	1103 234	1	
RC20GF272K	1103 98	1	
RC20GF272K	1103 125	1	
RC20GF272K	1104 112	1	
RC20GF272K	1104 147	1	
RC20GF272K	1104 159	1	
RC20GF272K	1104 208	1	
RC20GF272K	1104 229	1	
RC20GF272K	1104 249	1	
RC20GF272K	1105 234	1	
RC20GF273K	1105 14	1	
RC20GF273K	1105 21	1	
RC20GF273K	1105 22	1	
RC20GF273K	1105 39	1	
RC20GF273K	1105 141	1	
RC20GF275K	1103 250	1	
RC20GF472K	1104 67	1	
RC20GF472K	1105 228	1	
RC20GF472K	1105 9	1	
RC20GF472K	1105 12	1	
RC20GF472K	1105 16	1	
RC20GF472K	1105 88	1	
RC20GF472K	1105 116	1	
RC20GF472K	1105 119	1	
RC20GF472K	1105 140	1	
RC20GF472K	1105 152	1	
RC20GF472K	1105 156	1	
RC20GF472K	1105 166	1	
RC20GF472K	1105 174	1	
RC20GF472K	1105 181	1	
RC20GF472K	1105 188	1	
RC20GF472K	1105 206	1	
RC20GF472K	1105 216	1	
RC20GF562K	1103 164	1	
RC20GF562K	1103 166	1	

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PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
RC20GF562K	1103 191	1	
RC20GF562K	1103 193	1	
RC20GF562K	1103 110	1	
RC20GF562K	1103 117	1	
RC20GF562K	1104 84	1	
RC20GF562K	1104 90	1	
RC20GF562K	1104 133	1	
RC20GF562K	1105 226	1	
RC20GF562K	1105 227	1	
RC20GF562K	1105 300	1	
RC20GF565K	1103 241	1	
RC32GF152K	1105 318	1	
RC32GF152K	1105 326	1	
RC32GF152K	1105 332	1	
RC32GF152K	1105 339	1	
RC32GF152K	1105 344	1	
RC32GF152K	1105 353	1	
RC32GF152K	1105 354	1	
RC32GF152K	1105 363	1	
RC32GF152K	1105 368	1	
RC32GF152K	1105 371	1	
RC32GF152K	1105 380	1	
RC32GF152K	1105 389	1	
RC32GF272K	1105 43	1	
RC32GF272K	1105 44	1	
RL20S153G	1105 294	1	
RL20S272G	1103 174	1	
RL20S272G	1103 233	1	
RL20S272G	1103 100	1	
RL20S272G	1103 121	1	
RL20S272G	1104 109	1	
RL20S272G	1104 126B	1	
RL20S272G	1104 154	1	
RL20S272G	1104 162	1	
RL20S272G	1104 198	1	
RL20S272G	1104 205	1	
RL20S272G	1104 252	1	
RL20S272G	1105 274	1	
RL20S272G	1105 295	1	
RN60D6813F	1103 263	1	
RSM2C10R00F	1105 306	1	
RSM2C10R00F	1105 312	1	
RSM2C10000J	1105 290	1	
RSM2C15500F	1103 132	1	
RSM2C15500F	1105 260	1	
RSM2C22500F	1104 242	1	
RT4737	1103 190	1	
RT4737	1103 195	1	
RT4737	1103 196	1	
RT4737	1103 197	1	
RT4737	1103 112	1	
RT4737	1103 115	1	
RT4737	1105 249	1	
RT4737	1105 254	1	
RW69V181	1105 306A	1	
RW69V270	1105 312	1	
R4008X3-32CHROMATEDP	1103 274	3	

PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
R4008X3-32CHROMATEDP	1104 271	2	
R4008X3-32CHROMATEDP	1105 392	1	
SKT41BLK	1102 49	1	
SKT41BLU	1102 39	1	
SKT41BLU	1102 40	1	
SKT41BLU	1102 41	1	
SKT41BLU	1102 42	1	
SKT41BLU	1102 44	1	
SKT41BLU	1102 50	1	
SKT41BLU	1102 51	1	
SKT41BLU	1102 52	1	
SKT41BLU	1102 53	1	
SKT41RED	1102 43	1	
SKT41RED	1102 45	1	
SKT41RED	1102 46	1	
SKT41RED	1102 47	1	
SKT41RED	1102 48	1	
SKT41RED	1102 54	1	
SKT41RED	1102 55	1	
SKT41RED	1102 56	1	
SKT41RED	1102 57	1	
SKT41RED	1102 58	1	
SKT41RED	1102 59	1	
SKT41RED	1102 60	1	
SL208-231	1102 15	42	
SL208-231	1102 62	80	
SL347-322DWHT	1103 272	99	
SL347-322DWHT	1104 278	85	
SL347-322DWHT	1105 399	128	
SL354-351DBLK	1103 271	29	
SL354-351DBLK	1104 277	32	
SL354-351DBLK	1105 398	37	
SL354-351DRED	1103 266	8	
SL354-351DRED	1104 275	14	
SL354-351DRED	1105 394	6	
SL354-351DVIC	1103 269	5	
SL354-351DVIC	1104 276	4	
SL354-351DVIC	1105 397	2	
SL354-351DWHT	1103 270	150	
SL354-351DWHT	1104 279	139	
SL354-351DWHT	1105 400	177	
SL354-351DYEL	1103 268	4	
SL354-351DYEL	1104 273	2	
SL354-351DYEL	1105 396	2	
SL354-351DORN	1103 267	9	
SL354-351DORN	1104 274	11	
SL354-351DORN	1105 395	11	
SPL4040-2HOTTINNED	1101 61	1	
SRM34SNSS0000	1101 38	4	
TS2804	1103 190	1	
TS2804	1103 195	1	
TS2804	1103 196	1	
TS3856	1104 145	1	
TXB2P019-028B	1104 126A	1	
TXB2P019-028B	1104 130A	1	
T50508	1101 66	1	
XSRM34PNSS1000	1103 8	2	

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PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
XSRM34PNSS1000	1104 8	2	
1N4003	1105 291	1	
1N4003	1105 292	1	
1N4003	1105 296	1	
1N4003	1105 297	1	
1N4003	1105 317	1	
1N4003	1105 329	1	
1N4003	1105 341	1	
1N4003	1105 352	1	
1N4003	1105 355	1	
1N4003	1105 365	1	
1N4003	1105 379	1	
1N4756	1105 323	1	
1N4756	1105 342	1	
1N4756	1105 366	1	
1N4756	1105 377	1	
1N4756	1105 387	1	
1N645	1102 26	1	
1N645	1102 27	1	
1N645	1102 28	1	
1N645	1102 29	1	
1N645	1102 30	1	
1N645	1102 31	1	
1N645	1102 32	1	
1N645	1102 33	1	
1N645	1102 34	1	
1N645	1102 35	1	
1N645	1102 36	1	
1N645	1102 37	1	
1N645	1103 147	1	
1N645	1103 149	1	
1N645	1103 165	1	
1N645	1103 167	1	
1N645	1103 192	1	
1N645	1103 194	1	
1N645	1103 198	1	
1N645	1103 226	1	
1N645	1103 228	1	
1N645	1103 237	1	
1N645	1103 238	1	
1N645	1103 239	1	
1N645	1103 240	1	
1N645	1103 253	1	
1N645	1103 264	1	
1N645	1103 66	1	
1N645	1103 79	1	
1N645	1103 86	1	
1N645	1103 105	1	
1N645	1103 111	1	
1N645	1103 116	1	
1N645	1104 21	1	
1N645	1104 22	1	
1N645	1104 24	1	
1N645	1104 25	1	
1N645	1104 33	1	
1N645	1104 34	1	
1N645	1104 36	1	

PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
1N645	1104 40	1	
1N645	1104 42	1	
1N645	1104 47	1	
1N645	1104 48	1	
1N645	1104 58	1	
1N645	1104 63	1	
1N645	1104 72	1	
1N645	1104 80	1	
1N645	1104 88	1	
1N645	1104 91	1	
1N645	1104 121	1	
1N645	1104 121A	1	
1N645	1104 128	1	
1N645	1104 129	1	
1N645	1104 180	1	
1N645	1104 181	1	
1N645	1104 184	1	
1N645	1104 228	1	
1N645	1104 236	1	
1N645	1104 237	1	
1N645	1104 243	1	
1N645	1104 244	1	
1N645	1104 261	1	
1N645	1104 267	1	
1N645	1105 222	1	
1N645	1105 224	1	
1N645	1105 231	1	
1N645	1105 232	1	
1N645	1105 236	1	
1N645	1105 237	1	
1N645	1105 247	1	
1N645	1105 251	1	
1N645	1105 267	1	
1N645	1105 268	1	
1N645	1105 276	1	
1N645	1105 288	1	
1N645	1105 291	1	
1N645	1105 292	1	
1N645	1105 296	1	
1N645	1105 297	1	
1N645	1105 305	1	
1N645	1105 308	1	
1N645	1105 15	1	
1N645	1105 17	1	
1N645	1105 18	1	
1N645	1105 19	1	
1N645	1105 20	1	
1N645	1105 23	1	
1N645	1105 25	1	
1N645	1105 28	1	
1N645	1105 30	1	
1N645	1105 34	1	
1N645	1105 37	1	
1N645	1105 38	1	
1N645	1105 45	1	
1N645	1105 46	1	
1N645	1105 47	1	

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PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
1N645	1105 48	1	
1N645	1105 50	1	
1N645	1105 51	1	
1N645	1105 53	1	
1N645	1105 55	1	
1N645	1105 61	1	
1N645	1105 62	1	
1N645	1105 67	1	
1N645	1105 71	1	
1N645	1105 72	1	
1N645	1105 73	1	
1N645	1105 77	1	
1N645	1105 96	1	
1N645	1105 97	1	
1N645	1105 98	1	
1N645	1105 100	1	
1N645	1105 100A	1	
1N645	1105 111	1	
1N645	1105 112	1	
1N645	1105 113	1	
1N645	1105 114	1	
1N645	1105 115	1	
1N645	1105 118	1	
1N645	1105 121	1	
1N645	1105 122	1	
1N645	1105 123	1	
1N645	1105 124	1	
1N645	1105 125	1	
1N645	1105 126	1	
1N645	1105 127	1	
1N645	1105 128	1	
1N645	1105 131	1	
1N645	1105 135	1	
1N645	1105 138	1	
1N645	1105 142	1	
1N645	1105 143	1	
1N645	1105 144	1	
1N645	1105 149	1	
1N645	1105 151	1	
1N645	1105 157	1	
1N645	1105 164	1	
1N645	1105 165	1	
1N645	1105 175	1	
1N645	1105 182	1	
1N645	1105 190	1	
1N645	1105 204	1	
1N645	1105 215	1	
1N749A	1103 67	1	
1N749A	1103 90	1	
1N751A	1103 235	1	
1N751A	1105 298	1	
1N751A	1105 26	1	
1N754A	1103 165	1	
1N754A	1103 167	1	
1N754A	1103 208A	1	
1N754A	1103 208B	1	
1N754A	1104 152A	1	
1N754A	1104 210A	1	
1N758A	1103 111	1	
1N758A	1103 116	1	
1N965B	1103 192	1	
1N965B	1103 194	1	
1N965B	1103 257	1	
1N965B	1105 76	1	
109D566X0075T2	1105 303	1	
109D566X0075T2	1105 304	1	
109D566X0075T2	1105 311	1	
109D476X0050F2	1105 302	1	
109D476X0050F2	1105 311	1	
109D336X0075F2	1105 289	1	
118P10402S4	1105 301	1	
118P10402S4	1105 307	1	
118P10402S4	1105 310	1	
130D826X0030T2	1104 29	1	
150D475X0035B2	1103 184	1	
150D475X0035B2	1103 207	1	
150D475X0035B2	1103 95	1	
150D475X0035B2	1103 106	1	
150D475X0035B2	1103 136	1	
150D475X0035B2	1103 175	1	
150D475X0035B2	1103 176	1	
150D475X0035B2	1104 108	1	
150D475X0035B2	1104 142	1	
150D475X0035B2	1104 160	1	
150D475X0035B2	1104 207	1	
150D475X0035B2	1105 58	1	
150D475X0035B2	1105 70	1	
150D475X0035B2	1105 110A	1	
150D475X0035B2	1105 235	1	
150D475X0035B2	1105 239	1	
150D475X0035B2	1105 256	1	
150D475X0035B2	1105 261	1	
150D475X0035B2	1105 263	1	
150D475X0035B2	1105 266	1	
150D475X0035B2	1105 269	1	
150D476X0035S2	1103 231	1	
150D476X0035S2	1105 91	1	
150D476X0035S2	1105 302	1	
150D104X0035A2	1103 36	1	
150D104X0035A2	1103 37	1	
150D104X0035A2	1103 96	1	
150D104X0035A2	1104 190	1	
150D104X0035A2	1105 110	1	
150D105X0035A2	1103 201	1	
150D105X0035A2	1103 211	1	
150D105X0035A2	1103 218	1	
150D105X0035A2	1103 223	1	
150D105X0035A2	1103 224	1	
150D105X0035A2	1103 153	1	
150D105X0035A2	1104 18	1	
150D105X0035A2	1104 44A	1	
150D105X0035A2	1104 69	1	

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PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
150D105X0035A2	1104 74	1	
150D105X0035A2	1104 76	1	
150D105X0035A2	1104 116	1	
150D105X0035A2	1104 155	1	
150D105X0035A2	1104 168	1	
150D105X0035A2	1104 169	1	
150D105X0035A2	1104 213	1	
150D105X0035A2	1104 235	1	
150D105X0035A2	1105 33	1	
150D105X0035A2	1105 69	1	
150D105X0035A2	1105 264	1	
150D106X0020B2	1104 125	1	
150D156X0035R2	1103 134	1	
151D115X0020W2	1103 249	1	
151D115X0020W2	1103 150	1	
151D115X0020W2	1103 151	1	
151D115X0020W2	1104 83	1	
151D115X0020W2	1104 92	1	
151D115X0020W2	1104 170	1	
151D115X0020W2	1104 179	1	
151D115X0020W2	1104 255	1	
151D116X0035Y2	1103 160	1	
151D117X5010Z2	1103 64	1	
151D117X5010Z2	1103 89	1	
151D117X0010Z2	1104 204	1	
151D206X9010X2	1103 221	1	
151D345X0035X2	1103 120	1	
151D345X0035X2	1103 161	1	
151D345X0035X2	1104 65	1	
151D345X0035X2	1104 253	1	
151D345X0035X2	1105 225	1	
151D506X5010Y2	1103 62	1	
151D506X5010Y2	1103 65	1	
151D506X5010Y2	1103 87	1	
151D506X5010Y2	1103 88	1	
1804-00	1101 59	1	
1902-00CADPL	1101 63	1	
2N1132	1104 134	1	
2N1132	1105 168	1	
2N1132	1105 169	1	
2N1132	1105 183	1	
2N1132	1105 191	1	
2N1132	1105 198	1	
2N1132	1105 211	1	
2N1711	1104 135	1	
2N1711	1105 286	1	
2N2608	1103 212	1	
2N2608	1104 215	1	
2N2906A	1105 32	1	
2N2907	1103 74	1	
2N2907	1103 77	1	
2N2907	1103 81	1	
2N2907	1103 84	1	
2N2907	1105 345	1	
2N2905A	1104 134	1	
2N3019	1104 135	1	
2N3053	1105 287	1	

PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
2N3440	1103 84	1	
2N697	1105 286	1	
2N718A	1103 133	1	
2N718A	1103 139	1	
2N718A	1103 140	1	
2N718A	1103 141	1	
2N718A	1103 197	1	
2N718A	1103 220	1	
2N718A	1103 222	1	
2N718A	1103 225	1	
2N718A	1103 230	1	
2N718A	1103 243	1	
2N718A	1103 246	1	
2N718A	1103 254	1	
2N718A	1103 258	1	
2N718A	1103 261	1	
2N718A	1103 22	1	
2N718A	1103 28	1	
2N718A	1103 34	1	
2N718A	1103 50	1	
2N718A	1103 51	1	
2N718A	1103 54	1	
2N718A	1103 57	1	
2N718A	1103 60	1	
2N718A	1103 61	1	
2N718A	1103 71	1	
2N718A	1103 72	1	
2N718A	1103 109	1	
2N718A	1103 112	1	
2N718A	1103 115	1	
2N718A	1104 16	1	
2N718A	1104 41	1	
2N718A	1104 52	1	
2N718A	1104 53	1	
2N718A	1104 54	1	
2N718A	1104 55	1	
2N718A	1104 57	1	
2N718A	1104 60	1	
2N718A	1104 68	1	
2N718A	1104 75	1	
2N718A	1104 79	1	
2N718A	1104 86	1	
2N718A	1104 87	1	
2N718A	1104 94	1	
2N718A	1104 176	1	
2N718A	1104 185	1	
2N718A	1104 216	1	
2N718A	1104 222	1	
2N718A	1104 225	1	
2N718A	1104 230	1	
2N718A	1104 231	1	
2N718A	1104 245	1	
2N718A	1104 259	1	
2N718A	1104 264	1	
2N718A	1104 265	1	
2N718A	1105 221	1	
2N718A	1105 223	1	

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PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
2N718A	1105 240	1	
2N718A	1105 249	1	
2N718A	1105 254	1	
2N718A	1105 257	1	
2N718A	1105 299	1	
2N718A	1105 6	1	
2N718A	1105 8	1	
2N718A	1105 11	1	
2N718A	1105 29	1	
2N718A	1105 40	1	
2N718A	1105 41	1	
2N718A	1105 65	1	
2N718A	1105 75	1	
2N718A	1105 85	1	
2N718A	1105 86	1	
2N718A	1105 92	1	
2N718A	1105 109	1	
2N718A	1105 130	1	
2N718A	1105 133	1	
2N718A	1105 150	1	
2N718A	1105 158	1	
2N718A	1105 161	1	
2N718A	1105 176	1	
2N718A	1105 184	1	
2N718A	1105 192	1	
2N718A	1105 203	1	
2N718A	1105 210	1	
2N930	1104 16	1	
2N930	1104 41A	1	
2N956	1103 169	1	
2N956	1103 172	1	
2N956	1103 202	1	
2N956	1103 203	1	
2N956	1103 99	1	
2N956	1103 104	1	
2N956	1103 123	1	
2N956	1103 124	1	
2N956	1104 27	1	
2N956	1104 28	1	
2N956	1104 57	1	
2N956	1104 114	1	
2N956	1104 115	1	
2N956	1104 120	1	
2N956	1104 122	1	
2N956	1104 130	1	
2N956	1104 148	1	
2N956	1104 151	1	
2N956	1104 152	1	
2N956	1104 163	1	
2N956	1104 193	1	
2N956	1104 194	1	
2N956	1104 199	1	
2N956	1104 200	1	
2N956	1104 246	1	
2N956	1104 247	1	
2N956	1105 244	1	
2N956	1105 245	1	

PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
2N956	1105 272	1	
2N956	1105 273	1	
2N956	1105 325	1	
2N956	1105 328	1	
2N956	1105 331	1	
2N956	1105 340	1	
2N956	1105 343	1	
2N956	1105 348	1	
2N956	1105 361	1	
2N956	1105 364	1	
2N956	1105 376	1	
2N956	1105 378	1	
2N956	1105 385	1	
2N956	1105 330	1	
220-679	1101 16	104	
220-692	1102 17	94	
220-699-01	1101 21	1	
220-544	1102 23	2	
280-3778-010	1101 5	1	
280-3778-010	1102 1	1	
280-3778-020	1101 5	1	
280-3778-020	1102 1	1	
3005A	1104 136	1	
3005A	1105 285	1	
3005A	1105 170	1	
3005A	1105 199	1	
3005A	1105 212	1	
3005BNYLON	1104 138A	2	
3005BNYLON	1105 285C	2	
3005BNYLON	1105 172A	2	
3005BNYLON	1105 201A	2	
3005BNYLON	1105 214A	2	
302-0638-020	1101 14	4	
302-0348-000	1104 138	2	
302-0348-000	1105 285B	2	
302-0348-000	1105 172	2	
302-0348-000	1105 201	2	
302-0348-000	1105 214	2	
302-0488-000	1105 284B	4	
310-0076-000	1103 14	1	
310-0076-000	1104 14	1	
310-0076-000	1105 315	1	
310-0079-000	1101 64	1	
310-6320-000	1101 19	2	
340-0644-000	1103 2	6	
340-0644-000	1103 5	3	
340-0644-000	1104 2	6	
340-0644-000	1104 5	3	
4007-4HOTTINNED	1103 12	1	
4007-4HOTTINNED	1104 12	1	
4007-4HOTTINNED	1105 313	1	
4704-04-01-4102	1101 9	2	
4704-04-01-4102	1103 3	6	
4704-04-01-4102	1103 6	3	
4704-04-01-4102	1104 3	6	
4704-04-01-4102	1104 6	3	
502-1516-002	1103 10A	2	

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PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
502-1516-002	1104 10A	2	
522-3713-001	1101 0	1	
522-3713-003	1101 0	1	
522-3713-005	1101 0	1	
522-3713-006	1101 0	1	
522-3713-007	1101 0	1	
522-3713-009	1101 0	1	
522-3713-011	1101 0	1	
522-3713-012	1101 0	1	
522-3713-015	1101 0	1	
522-3713-017	1101 0	1	
522-3713-021	1101 0	1	
541-5954-002	1103 10	8	
541-5954-002	1104 10	8	
541-5955-002	1102 22	2	
541-5969-002	1103 7	3	
541-5969-002	1104 7	3	
541-6021-002	1101 68	4	
542-6162-002	1101 31	4	
547-5305-002	1101 57	1	
554-2736-002	1101 20	2	
554-2738-002	1102 19	1	
554-2739-002	1105 1	3	
554-2740-002	1105 2	2	
554-5785-005	1102 63	1	
554-5786-008	1102 16	1	
554-5788-003	1102 18	1	
554-5848-001	1102 11	4	
554-5849-001	1102 3	4	
6009-8A	1103 273	3	
6009-8A	1103 276	3	
6009-8A	1104 270	2	
6009-8A	1105 391	1	
67-7769	1105 367	1	
68-1660-26	1101 40	16	
68-1660-26	1101 44	8	
68-1660-40	1101 58	1	
68-1660-40	1101 67	4	
68-1660-40	1101 71	4	
68-1660-40	1103 143	2	
68-1660-40	1103 187	2	
68-1660-40	1103 93	2	
68-1660-40	1103 127	2	
68-1660-40	1104 98	2	
68-1660-40	1104 165	2	
68-1660-40	1105 284A	4	
68NM26	1103 9	8	
68NM26	1104 9	8	
757-3422-002	1101 12	1	
761-8787-001	1102 2	1	
761-8787-003	1102 2	1	
761-8787-005	1102 2	1	
761-8787-006	1102 2	1	
761-8787-007	1102 2	1	
761-8787-009	1102 2	1	
761-8787-011	1102 2	1	
761-2956-001	1103 277	44	
761-2956-001	1104 272	45	

PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
761-2956-001	1105 393	53	
761-2956-002	1103 276	3	
761-3351-002	1101 7	1	
761-3386-001	1101 10	1	
761-3398-001	1103 275	9	
761-3398-001	1104 269	9	
761-3399-001	1105 3	1	
761-3400-001	1101 42	1	
761-3401-001	1101 43	1	
761-3403-001	1101 46	2	
761-3404-001	1101 39	8	
761-3405-001	1101 1	1	
761-3407-001	1101 3	1	
761-3409-002	1104 280	1	
761-3410-002	1103 278	1	
761-3411-004	1101 49	1	
761-3412-004	1101 55	1	
761-3413-005	1101 29	1	
761-3414-003	1101 75	1	
761-3427-002	1105 401	1	
761-3457-001	1101 51	1	
761-3458-001	1101 53	1	
761-5187-001	1101 28	2	
761-5190-001	1101 15	2	
761-5240-001	1101 6	1	
761-7393-001	1101 17	1	
761-7484-001	1101 30	1	
761-7484-001	1102 0	REF	
761-7484-003	1101 30	1	
761-7484-003	1102 0	REF	
761-7484-005	1101 30	1	
761-7484-005	1102 0	REF	
761-7484-006	1101 30	1	
761-7484-006	1102 0	REF	
761-7484-007	1101 30	1	
761-7484-007	1102 0	REF	
761-7484-009	1101 30	1	
761-7484-009	1102 0	REF	
761-7484-011	1101 30	1	
761-7484-011	1102 0	REF	
761-7485-001	1102 12	1	
761-7486-001	1102 25	1	
761-7487-001	1102 38	1	
761-7488-001	1101 37	1	
761-7488-001	1104 0	REF	
761-7489-001	1104 268	1	
761-7490-001	1101 48	1	
761-7490-001	1105 0	REF	
761-7491-001	1105 390	1	
761-7492-001	1101 36	1	
761-7492-001	1103 0	REF	
761-7493-001	1103 265	1	
761-7494-001	1101 22	1	
761-7495-001	1101 73	1	
768-1921-001	1105 284	2	
768-1922-001	1105 283	4	
768-1032-001	1102 2A	1	

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SYMBOL	FIG. - ITEM	PART NUMBER
CR1	1104 63	1N645
CR1	1105 15	1N645
CR1	1103 105	1N645
CR10	1103 198	1N645
CR10	1104 48	1N645
CR10	1105 26	1N751A
CR10	1102 27	1N645
CR11	1103 264	1N645
CR11	1104 36	1N645
CR11	1105 30	1N645
CR11	1102 28	1N645
CR12	1104 47	1N645
CR12	1105 25	1N645
CR12	1102 29	1N645
CR12	1103 116	1N645
CR12	1103 116	1N758A
CR13	1105 34	1N645
CR13	1102 30	1N645
CR13	1103 111	1N645
CR13	1103 111	1N758A
CR14	1103 149	1N645
CR14	1104 80	1N645
CR14	1105 19	1N645
CR14	1102 31	1N645
CR15	1103 147	1N645
CR15	1104 72	1N645
CR15	1105 18	1N645
CR16	1103 240	1N645
CR16	1104 91	1N645
CR16	1105 48	1N645
CR17	1103 239	1N645
CR17	1104 88	1N645
CR17	1105 115	1N645
CR18	1103 237	1N645
CR18	1104 129	1N645
CR18	1105 114	1N645
CR19	1103 238	1N645
CR19	1104 128	1N645
CR19	1105 113	1N645
CR2	1104 58	1N645
CR2	1105 45	1N645
CR2	1102 37	1N645
CR2	1103 90	1N749A
CR20	1103 228	1N645
CR20	1104 181	1N645
CR20	1105 112	1N645
CR21	1103 226	1N645
CR21	1104 236	1N645
CR21	1105 111	1N645
CR22	1103 257	1N965B
CR22	1104 237	1N645
CR22	1105 37	1N645
CR23	1104 180	1N645
CR23	1105 51	1N645
CR23	1103 86	1N645
CR24	1104 228	1N645
CR24	1105 62	1N645
CR24	1103 79	1N645
CR25	1104 184	1N645
CR25	1105 50	1N645
CR26	1104 244	1N645
CR26	1105 98	1N645
CR27	1103 208B	1N754A
CR27	1104 243	1N645
CR27	1105 77	1N645
CR28	1103 208A	1N754A
CR28	1104 267	1N645
CR28	1105 76	1N965B
CR29	1103 253	1N645
CR29	1104 261	1N645
CR29	1105 61	1N645
CR3	1104 21	1N645
CR3	1102 36	1N645
CR3	1103 66	1N645
CR30	1104 121	1N645
CR30	1104 121A	1N645
CR30	1105 71	1N645
CR31	1104 152A	1N754A
CR31	1105 67	1N645
CR32	1104 210A	1N754A
CR32	1105 72	1N645
CR33	1105 73	1N645
CR34	1105 97	1N645
CR35	1105 100	1N645
CR35	1105 100A	1N645
CR36	1105 224	1N645
CR37	1105 276	1N645
CR37	1104 33	1N645
CR38	1105 231	1N645
CR39	1105 236	1N645
CR4	1104 25	1N645
CR4	1102 35	1N645
CR4	1103 67	1N749A
CR40	1105 232	1N645
CR41	1105 237	1N645
CR42	1105 247	1N645
CR43	1105 251	1N645
CR44	1105 308	1N645
CR45	1105 96	1N645
CR46	1105 53	1N645
CR47	1105 387	1N4756
CR48	1105 323	1N4756
CR49	1105 377	1N4756
CR5	1103 235	1N751A
CR5	1104 24	1N645
CR5	1102 34	1N645
CR50	1105 330	2N956
CR51	1105 366	1N4756
CR52	1105 342	1N4756
CR53	1105 305	1N645
CR54	1105 296	1N645
CR54	1105 296	1N4003

SYMBOL INDEX

SYMBOL	FIG. - ITEM	PART NUMBER
CR55	1105 297	1N645
CR55	1105 297	1N4003
CR56	1105 292	1N645
CR56	1105 292	1N4003
CR57	1105 291	1N645
CR57	1105 291	1N4003
CR58	1105 288	1N645
CR59	1105 298	1N751A
CR6	1103 192	1N645
CR6	1103 192	1N965B
CR6	1104 22	1N645
CR6	1105 38	1N645
CR6	1102 33	1N645
CR60	1105 317	1N4003
CR62	1105 142	1N645
CR63	1105 138	1N645
CR64	1105 135	1N645
CR65	1105 126	1N645
CR66	1105 165	1N645
CR67	1105 164	1N645
CR68	1105 123	1N645
CR69	1105 122	1N645
CR7	1103 194	1N645
CR7	1103 194	1N965B
CR7	1104 42	1N645
CR7	1105 20	1N645
CR7	1102 32	1N645
CR70	1105 124	1N645
CR71	1105 125	1N645
CR72	1105 157	1N645
CR73	1105 118	1N645
CR74	1105 121	1N645
CR75	1105 143	1N645
CR76	1105 131	1N645
CR77	1105 127	1N645
CR78	1105 128	1N645
CR79	1105 149	1N645
CR8	1103 165	1N645
CR8	1103 165	1N754A
CR8	1104 40	1N645
CR8	1105 23	1N645
CR80	1105 151	1N645
CR81	1105 144	1N645
CR82	1105 222	1N645
CR82	1105 379	1N4003
CR83	1105 329	1N4003
CR83	1105 175	1N645
CR84	1105 365	1N4003
CR84	1105 215	1N645
CR85	1105 341	1N4003
CR85	1105 182	1N645
CR86	1105 355	1N4003
CR86	1105 204	1N645
CR87	1105 352	1N4003
CR87	1105 190	1N645
CR88	1105 46	1N645
CR89	1105 47	1N645
CR9	1103 167	1N645
CR9	1103 167	1N754A
CR9	1104 34	1N645
CR9	1105 28	1N645
CR9	1102 26	1N645
CR90	1105 55	1N645
CR91	1105 268	1N645
CR92	1105 267	1N645
CR93	1105 17	1N645
C1	1104 18	150D105X0035A2
C1	1105 33	150D105X0035A2
C1	1103 37	150D104X0035A2
C10	1104 142	150D475X0035B2
C10	1105 261	150D475X0035B2
C10	1103 95	150D475X0035B2
C11	1104 125	150D106X0020B2
C11	1105 235	150D475X0035B2
C11	1103 89	151D117X5010Z2
C12	1104 74	150D105X0035A2
C12	1105 239	150D475X0035B2
C13	1104 44A	150D105X0035A2
C13	1105 264	150D105X0035A2
C14	1104 69	150D105X0035A2
C14	1105 266	150D475X0035B2
C14	1103 131	CM05E510J03
C15	1104 116	150D105X0035A2
C15	1103 134	150D156X0035R2
C15	1105 252	CL27BL1R5TN3
C16	1104 76	150D105X0035A2
C16	1103 160	151D116X0035Y2
C16	1105 253	CL27BL1R5TN3
C17	1103 161	151D345X0035X2
C17	1105 310	118P10402S4
C17	1104 174	CL27BE400UN3
C18	1103 184	150D475X0035B2
C18	1104 170	151D115X0020W2
C18	1105 110	150D104X0035A2
C19	1105 256	150D475X0035B2
C19	1104 171	CK06CW103M
C19	1103 101	CM05E510J03
C2	1104 65	151D345X0035X2
C2	1105 70	150D475X0035B2
C2	1103 36	150D104X0035A2
C20	1104 155	150D105X0035A2
C20	1103 175	150D475X0035B2
C20	1105 260A	CM05F121J03
C21	1103 171	CM05E510J03
C21	1104 153	CM05E510J03
C22	1104 169	150D105X0035A2
C22	1103 176	150D475X0035B2
C23	1104 168	150D105X0035A2
C23	1103 153	150D105X0035A2
C24	1103 136	150D475X0035B2
C25	1103 211	150D105X0035A2
C25	1104 160	150D475X0035B2

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SYMBOL	FIG. - ITEM		PART NUMBER
C26	1103	218	150D105X0035A2
C26	1104	179	151D115X0020W2
C27	1103	207	150D475X0035B2
C27	1104	235	150D105X0035A2
C27	1105	304	109D566X0075T2
C28	1103	201	150D105X0035A2
C28	1105	303	109D566X0075T2
C28	1104	183	CK06CW103M
C29	1104	204	151D117X0010Z2
C29	1103	151	151D115X0020W2
C29	1105	307	118P10402S4
C3	1105	58	150D475X0035B2
C3	1103	96	150D104X0035A2
C3	1104	139	CM06F11J03
C30	1103	150	151D115X0020W2
C30	1105	301	118P10402S4
C30	1104	211	CK06CW103M
C31	1103	249	151D115X0020W2
C31	1104	213	150D105X0035A2
C31	1105	302	150D476X0035S2
C31	1105	302	109D476X0050F2
C32	1103	223	150D105X0035A2
C32	1105	311	109D476X0050F2
C32	1105	311	109D566X0075T2
C32	1104	197	CM05E510J03
C33	1103	221	151D206X9010X2
C33	1104	190	150D104X0035A2
C33	1105	289	109D336X0075F2
C33	1105	289	CL24BJ180TP3
C34	1103	224	150D105X0035A2
C34	1105	289A	CK06CW103M
C34	1104	203	CM05E510J03
C35	1104	207	150D475X0035B2
C35	1103	214	CK06CW103M
C36	1103	231	150D476X0035S2
C36	1104	251	CM05E510J03
C37	1104	253	151D345X0035X2
C38	1104	255	151D115X0020W2
C39	1104	61A	CK06CW103M
C4	1104	29	130D826X0030T2
C4	1105	69	150D105X0035A2
C4	1103	106	150D475X0035B2
C40	1104	132	CL27BL060TN3
C41	1104	129A	CK06CW103M
C42	1103	205	CM05E510J03
C43	1103	120	151D345X0035X2
C5	1104	83	151D115X0020W2
C5	1105	110A	150D475X0035B2
C5	1103	62	151D506X5010Y2
C6	1105	91	150D476X0035S2
C6	1103	65	151D506X5010Y2
C7	1104	108	150D475X0035B2
C7	1105	225	151D345X0035X2
C7	1103	64	151D117X5010Z2
C8	1105	269	150D475X0035B2
C8	1103	88	151D506X5010Y2
C8	1104	110	CM05E510J03
C9	1104	92	151D115X0020W2
C9	1105	263	150D475X0035B2
C9	1103	87	151D506X5010Y2
J10	1102	52	SKT41BLU
J11	1102	51	SKT41BLU
J12	1102	50	SKT41BLU
J13	1102	49	SKT41BLK
J14	1102	48	SKT41RED
J15	1102	47	SKT41RED
J16	1102	46	SKT41RED
J17	1102	45	SKT41RED
J18	1102	44	SKT41BLU
J19	1102	43	SKT41RED
J2	1101	21	220-699-01
J2	1102	60	SKT41RED
J20	1102	42	SKT41BLU
J21	1102	41	SKT41BLU
J22	1102	40	SKT41BLU
J23	1102	39	SKT41BLU
J3	1102	59	SKT41RED
J3-J6	1101	38	SRM34SNSS0000
J4	1102	58	SKT41RED
J5	1102	57	SKT41RED
J6	1102	56	SKT41RED
J7	1102	55	SKT41RED
J8	1102	54	SKT41RED
J9	1102	53	SKT41BLU
P1	1101	70	DRX2-57P57P34B02
P2	1102	19	554-2738-002
P3,P4	1104	8	XSRM34PNSS1000
P5,P6	1103	8	XSRM34PNSS1000
Q1	1104	16	2N718A
Q1	1104	16	2N930
Q1	1105	6	2N718A
Q1	1103	50	2N718A
Q10	1104	54	2N718A
Q10	1105	66	MM2186
Q10	1103	99	2N956
Q11	1104	115	2N956
Q11	1105	109	2N718A
Q11	1103	104	2N956
Q12	1104	114	2N956
Q12	1105	102	MM2186
Q12	1103	109	2N718A
Q13	1104	86	2N718A
Q13	1105	75	2N718A
Q13	1103	72	2N718A
Q14	1104	87	2N718A
Q14	1105	85	2N718A
Q14	1103	71	2N718A
Q15	1104	79	2N718A
Q15	1105	93	MM2186
Q15	1103	77	2N2907
Q15	1103	77	MM2186
Q16	1104	75	2N718A

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SYMBOL	FIG. - ITEM	PART NUMBER
Q16	1105 83	MM2186
Q16	1103 74	2N2907
Q16	1103 74	MM2186
Q17	1104 68	2N718A
Q17	1105 86	2N718A
Q17	1103 81	2N2907
Q18	1105 92	2N718A
Q18	1103 84	2N2907
Q18	1103 84	2N3440
Q18,Q19	1104 145	TS3856
Q19	1105 223	2N718A
Q2	1104 57	2N718A
Q2	1104 57	2N956
Q2	1105 8	2N718A
Q2	1103 51	2N718A
Q20	1105 275	MM2186
Q20	1104 148	2N956
Q21	1105 273	2N956
Q21	1103 190	TS2804
Q21	1103 190	RT4737
Q21	1104 151	2N956
Q22	1105 272	2N956
Q22	1103 195	TS2804
Q22	1103 195	RT4737
Q22	1104 152	2N956
Q23	1105 257	2N718A
Q23	1103 196	TS2804
Q23	1103 196	RT4737
Q23	1104 163	2N956
Q24	1105 244	2N956
Q24	1103 197	2N718A
Q24	1103 197	RT4737
Q24	1104 176	2N718A
Q25	1105 245	2N956
Q25	1103 169	2N956
Q25	1104 225	2N718A
Q26	1105 240	2N718A
Q26	1103 172	2N956
Q26	1104 230	2N718A
Q27	1105 249	2N718A
Q27	1105 249	RT4737
Q27	1103 139	2N718A
Q27	1104 231	2N718A
Q28	1105 254	2N718A
Q28	1105 254	RT4737
Q28	1103 230	2N718A
Q28	1104 215	2N2608
Q29	1105 378	2N956
Q29	1103 261	2N718A
Q29	1104 216	2N718A
Q3	1104 60	2N718A
Q3	1105 11	2N718A
Q3	1103 54	2N718A
Q30	1105 328	2N956
Q30	1103 258	2N718A
Q30	1104 222	2N718A
Q31	1105 367	67-7769
Q31	1103 254	2N718A
Q31	1104 193	2N956
Q32	1105 340	2N956
Q32	1103 246	2N718A
Q32	1104 194	2N956
Q33	1105 361	2N956
Q33	1103 243	2N718A
Q33	1104 200	2N956
Q34	1105 348	2N956
Q34	1103 202	2N956
Q34	1104 199	2N956
Q35	1103 203	2N956
Q35	1104 246	2N956
Q36	1105 286	2N697
Q36	1105 286	2N1711
Q36	1104 247	2N956
Q37	1105 287	2N3053
Q37	1104 245	2N718A
Q37	1103 124	2N956
Q38	1105 299	2N718A
Q38	1104 259	2N718A
Q38	1103 123	2N956
Q39	1103 133	2N718A
Q39	1104 264	2N718A
Q39	1105 139	MM2186
Q4	1104 55	2N718A
Q4	1103 57	2N718A
Q40	1104 265	2N718A
Q40	1105 155	MM2186
Q40	1103 115	2N718A
Q40	1103 115	RT4737
Q41	1104 130	2N956
Q41	1105 158	2N718A
Q41	1103 112	2N718A
Q41	1103 112	RT4737
Q42	1103 140	2N718A
Q42	1104 134	2N1132
Q42	1104 134	2N2905A
Q42	1105 161	2N718A
Q43	1103 141	2N718A
Q43	1104 120	2N956
Q43	1105 130	2N718A
Q44	1103 225	2N718A
Q44	1104 126	MM2186
Q44	1104 126	MM2187
Q44	1105 150	2N718A
Q45	1103 222	2N718A
Q45	1104 135	2N1711
Q45	1104 135	2N3019
Q45	1105 133	2N718A
Q46	1105 221	2N718A
Q46	1105 385	2N956
Q46	1103 212	2N2608
Q46	1104 41A	2N930
Q47	1105 325	2N956

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SYMBOL	FIG. - ITEM	PART NUMBER
Q47	1103 220	2N718A
Q47	1104 122	2N956
Q47	1105 176	2N718A
Q48	1105 376	2N956
Q48	1104 185	2N718A
Q48	1105 210	2N718A
Q49	1105 331	2N956
Q49	1104 94	2N718A
Q49	1105 184	2N718A
Q5	1104 27	2N956
Q5	1105 40	2N718A
Q5	1103 60	2N718A
Q50	1105 364	2N956
Q50	1105 203	2N718A
Q51	1105 343	2N956
Q51	1105 192	2N718A
Q52	1105 381	MM2186
Q52	1105 168	2N1132
Q53	1105 327	MM2186
Q53	1105 169	2N1132
Q54	1105 370	MM2186
Q54	1105 211	2N1132
Q55	1105 338	MM2186
Q55	1105 183	2N1132
Q56	1105 362	MM2186
Q56	1105 198	2N1132
Q57	1105 345	2N2907
Q57	1105 191	2N1132
Q6	1104 28	2N956
Q6	1105 41	2N718A
Q6	1103 61	2N718A
Q7	1104 41	2N718A
Q7	1105 32	2N2906A
Q7	1103 34	2N718A
Q8	1104 52	2N718A
Q8	1105 29	2N718A
Q8	1103 28	2N718A
Q9	1104 53	2N718A
Q9	1105 65	2N718A
Q9	1103 22	2N718A
R1	1104 17	MF1-8 8-11K1PCTTO
R1	1105 277	MF1-8 31-6K1PCTTO
R1	1102 24	MF1-8 511R0FTO
R1	1103 38	MF1-8 422K1PCTTO
R10	1104 62	MF1-8 21-5K1PCTTO
R10	1103 33	MF1-8 121K1PCTTO
R10	1105 22	RC20GF273K
R100	1104 240	MF1-8 10K1PCTTO
R100	1103 256	RC07F103K
R100	1105 140	RC20GF472K
R101	1104 241	MF1-8 9-09K1PCTTO
R101	1105 300	RC20GF562K
R101	1103 259	RC07GF153K
R102	1103 263	MF1-8 40202FTO
R102	1103 263	RN60D6813F
R102	1104 258	RC07GF153K
R102	1105 137	RC07F103K
R103	1103 255	RC07F103K
R103	1104 254	RC07F103K
R103	1105 136	RC07GF153K
R104	1103 252	RC07GF153K
R104	1104 238	RC07GF274K
R104	1105 116	RC20GF472K
R105	1103 251	MF1-8 48702FTO
R105	1103 251	RC07GF155K
R105	1104 266	RC07F103K
R105	1105 154	RC07GF153K
R106	1103 245	RC07F103K
R106	1104 263	RC07F103K
R106	1105 153	RC07F103K
R107	1103 248	RC07GF153K
R107	1104 262	RC07GF153K
R107	1105 119	RC20GF472K
R108	1103 250	MF1-8 56202FTO
R108	1103 250	RC20GF275K
R108	1104 260	RC07GF153K
R108	1105 156	RC20GF472K
R109	1103 244	RC07F103K
R109	1104 51	RC20GF123K
R109	1105 159	RC07GF153K
R11	1103 31	MF1-8 121K1PCTTO
R11	1104 43	RC07GF153K
R11	1105 44	RC32GF272K
R110	1104 239	MF1-8 3-16K1PCTTO
R110	1103 242	RC07GF153K
R110	1105 160	RC07GF153K
R111	1103 241	MF1-8 10003FTO
R111	1104 192	MF1-8 348K1PCTTO
R111	1103 241	RC20GF565K
R111	1105 163	RC07GF153K
R112	1103 199	MF1-8 100K1PCTTO
R112	1104 191	MF1-8 215K1PCTTO
R112	1105 162	RC07GF153K
R113	1103 200	MF1-8 100K1PCTTO
R113	1104 123	RC07GF222K
R113	1105 129	RC07GF273K
R114	1103 236	MF1-8 100K1PCTTO
R114	1103 236	RC07GF104K
R114	1104 209	RC07GF565K
R114	1105 146	RC07GF153K
R115	1103 210	MF1-8 42-2K1PCTTO
R115	1104 210	RC07GF565K
R115	1105 132	RC07F103K
R116	1103 229	RC07F103K
R116	1104 212	RC07GF105K
R116	1105 145	RC07GF153K
R117	1104 220	MF1-8 6-19K1PCTTO
R117	1103 227	RC07F103K
R117	1105 152	RC20GF472K
R118	1103 219	RC07GF225K
R118	1104 219	RC07GF222K
R118	1105 148	RC07F103K

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SYMBOL	FIG. - ITEM	PART NUMBER
R119	1104 217	MF1-8 26-1K1PCTTO
R119	1103 213	RC07GF474K
R119	1105 147	RC07GF153K
R12	1104 44	RC07F103K
R12	1105 7	RC07F103K
R12	1103 53	RC07GF153K
R120	1103 217	MF1-8 38-3K1PCTTO
R120	1103 217	MF1-8 34-8K1PCTTO
R120	1105 382	RC07GF102K
R120	1105 218	RC07GF102K
R12J	1104 186	MF1-8 348K1PCTTO
R121	1105 383	RC07GF472K
R121	1103 215	RC07GF474K
R121	1104 126B	RL20S272G
R121	1105 219	RC07GF472K
R122	1103 129	MF1-8 8-25K1PCTTO
R122	1105 324	RC07GF102K
R122	1104 140	RC07GF222K
R122	1105 179	RC07GF102K
R123	1105 322	RC07GF472K
R123	1104 85	RC07F103K
R123	1105 178	RC07GF472K
R123	1103 125	RC20GF272K
R124	1105 375	RC07GF102K
R124	1105 208	RC07GF102K
R124	1103 121	RL20S272G
R125	1104 187	MF1-8 215K1PCTTO
R125	1103 130	MF1-8 90-9K1PCTTO
R125	1105 374	RC07GF472K
R125	1105 207	RC07GF472K
R126	1105 337	RC07GF102K
R126	1103 132	RSM2C15500F
R126	1104 188	RC07GF153K
R126	1105 187	RC07GF102K
R127	1105 336	RC07GF472K
R127	1104 189	RC07F103K
R127	1105 186	RC07GF472K
R127	1103 122	RC07GF391K
R128	1104 89	MF1-8 82-5K1PCTTO
R128	1104 89	MF1-8 100K1PCTTO
R128	1105 360	RC07GF102K
R128	1105 202	RC07GF102K
R128	1103 117	RC20GF562K
R129	1104 93	MF1-8 82-5K1PCTTO
R129	1104 93	MF1-8 147K1PCTTO
R129	1105 359	RC07GF472K
R129	1105 196	RC07GF472K
R129	1103 110	RC20GF562K
R13	1104 56	RC07GF273K
R13	1104 56	RC07GF682K
R13	1105 10	RC07F103K
R13	1103 55	RC07F103K
R130	1103 162	MF1-8 14-7K1PCTTO
R130	1105 346	RC07GF102K
R130	1104 96	RC07GF153K
R130	1105 193	RC07GF102K
R131	1103 185	MF1-8 14-7K1PCTTO
R131	1105 347	RC07GF472K
R131	1104 95	RC07F103K
R131	1105 194	RC07GF472K
R132	1103 209	MF1-8 6-19K1PCTTO
R132	1105 389	RC32GF152K
R132	1104 131	RC07GF222K
R132	1105 166	RC20GF472K
R133	1103 216	MF1-8 6-19K1PCTTO
R133	1105 388	RC07GF272K
R133	1105 167	RC07F103K
R134	1105 220	RC07GF223K
R134	1105 386	RC07GF223K
R135	1105 318	RC32GF152K
R135	1105 174	RC20GF472K
R136	1105 319	RC07GF272K
R136	1105 173	RC07F103K
R137	1105 320	RC07GF223K
R137	1105 177	RC07GF223K
R138	1105 368	RC32GF152K
R138	1105 216	RC20GF472K
R139	1105 369	RC07GF272K
R139	1105 217	RC07F103K
R14	1104 23	MF1-4 1470K1PCTTO
R14	1103 27	MF1-8 237K1PCTTO
R14	1105 13	RC07GF153K
R140	1103 113	MF1-8 511R0FTO
R140	1103 113	MF1-8 619R0FTO
R140	1103 113	MF1-8 750R0FTO
R140	1103 113	MF1-8 909R0FTO
R140	1103 113	MF1-8 11000FTO
R140	1105 372	RC07GF223K
R140	1105 209	RC07GF223K
R141	1103 114	MF1-8 10R00FTO
R141	1105 332	RC32GF152K
R141	1105 181	RC20GF472K
R142	1103 118	MF1-8 6-19K1PCTTO
R142	1105 333	RC07GF272K
R142	1105 180	RC07F103K
R143	1103 119	MF1-8 6-19K1PCTTO
R143	1105 334	RC07GF223K
R143	1105 185	RC07GF223K
R144	1105 354	RC32GF152K
R144	1103 247	RC07F103K
R144	1105 206	RC20GF472K
R145	1105 356	RC07GF272K
R145	1105 205	RC07F103K
R146	1105 357	RC07GF223K
R146	1105 197	RC07GF223K
R147	1105 353	RC32GF152K
R147	1105 188	RC20GF472K
R148	1105 351	RC07GF272K
R148	1105 189	RC07F103K
R149	1105 350	RC07GF223K
R149	1105 195	RC07GF223K
R15	1103 29	MF1-8 237K1PCTTO

SYMBOL INDEX

SYMBOL	FIG. - ITEM		PART NUMBER
R15	1104	32	RC07F103K
R15	1105	12	RC20GF472K
R150	1105	117	RC07GF122K
R151	1105	120	RC07GF122K
R153	1105	24	RC20GF103K
R154	1105	380	RC32GF152K
R155	1105	384	RC07GF472K
R156	1105	326	RC32GF152K
R157	1105	321	RC07GF472K
R158	1105	371	RC32GF152K
R159	1105	373	RC07GF472K
R16	1104	29A	MF1-8 23-7K1PCTTO
R16	1105	9	RC20GF472K
R16	1103	58	RC07GF153K
R160	1105	339	RC32GF152K
R161	1105	335	RC07GF472K
R162	1105	363	RC32GF152K
R163	1105	358	RC07GF472K
R164	1105	344	RC32GF152K
R165	1105	349	RC07GF472K
R17	1104	39	MF1-8 237K1PCTTO
R17	1105	43	RC32GF272K
R17	1103	56	RC07F103K
R18	1104	38	MF1-8 237K1PCTTO
R18	1103	23	MF1-8 46402FTO
R18	1105	16	RC20GF472K
R19	1103	21	MF1-8 46402FTO
R19	1105	309	RC07GF560K
R19	1104	35	RC07GF473K
R2	1104	66	MF1-8 28-7K1PCTTO
R2	1105	282	MF1-8 14-7K1PCTTO
R2	1102	9	MF1-8 5-62K1PCTTO
R2	1103	45	MF1-8 348K1PCTTO
R2	1104	66	RC07GF273K
R20	1104	49	RC07GF273K
R20	1105	42	RC07F103K
R20	1103	59	RC07GF153K
R21	1104	50	RC07F103K
R21	1105	27	RC07GF273K
R21	1103	25	RC07F103K
R22	1103	17	MF1-4 1000K1PCTTO
R22	1104	37	RC07F103K
R22	1105	36	RC07F103K
R23	1103	16	MF1-4 1000K1PCTTO
R23	1104	46	RC07F103K
R23	1105	31	RC07GF153K
R24	1104	45	RC20GF103K
R24	1105	35	RC07GF273K
R24	1103	18	RC07GF153K
R25	1104	100	MF1-8 36501FTO
R25	1105	141	RC20GF273K
R25	1103	19	RC07F103K
R26	1104	101	MF1-8 19-6K1PCTTO
R26	1103	40	MF1-8 110K1PCTTO
R26	1105	49	RC07GF153K
R27	1104	102	MF1-8 56-2K1PCTTO
R27	1105	56	RC07GF273K
R27	1103	35	RC07GF153K
R28	1104	103	MF1-8 38-3K1PCTTO
R28	1105	52	RC07GF153K
R28	1103	32	RC07F103K
R29	1104	104	MF1-8 75K1PCTTO
R29	1103	41	MF1-8 287K1PCTTO
R29	1105	57	RC07GF273K
R3	1104	19	MF1-8 511R0FTO
R3	1104	19	MF1-8 562K1PCTT7
R3	1105	278	MF1-8 10K1PCTTO
R3	1102	10	MF1-8 3-48K1PCTTO
R3	1103	46	MF1-8 383K1PCTTO
R30	1104	105	MF1-8 147K1PCTTO
R30	1105	57A	RC07GF824K
R30	1103	30	RC07GF153K
R31	1104	106	MF1-8 287K1PCTTO
R31	1105	54	MF1-8 82-5K1PCTTO
R31	1103	26	RC07F103K
R32	1104	107	MF1-8 23-7K1PCTTO
R32	1103	42	MF1-8 61902FTO
R33	1104	113	MF1-8 8-25K1PCTTO
R33	1105	64	RC07F103K
R33	1103	20	RC07GF153K
R34	1104	112	RC20GF272K
R34	1105	63	RC07F103K
R34	1103	24	RC07F103K
R35	1105	104	MF1-8 2-61K1PCTTO
R35	1103	39	MF1-8 316K1PCTTO
R35	1104	109	RL20S272G
R36	1104	111	MF1-8 90-9K1PCTTO
R36	1105	79	MF1-8 100K1PCTTO
R36	1103	97	MF1-8 121K1PCTTO
R37	1104	35A	MF1-8 8-11K1PCTTO
R37	1105	78	MF1-8 261K1PCTTO
R37	1103	103	MF1-8 8-25K1PCTTO
R38	1104	84	RC20GF562K
R38	1105	59	RC07GF224K
R38	1103	98	RC20GF272K
R39	1104	90	RC20GF562K
R39	1105	60	RC07GF563K
R39	1103	100	RL20S272G
R4	1104	59	MF1-8 10K1PCTTO
R4	1102	6	MF1-8 261K1PCTTO
R4	1103	44	MF1-4 562K1PCTTO
R4	1105	14	RC20GF273K
R40	1104	141	MF1-8 90-9K1PCTTO
R40	1103	102	MF1-8 90-9K1PCTTO
R40	1105	108	RC07GF183K
R41	1104	78	MF1-8 42-2K1PCTTO
R41	1103	107	MF1-8 1K1PCTTO
R41	1105	107	RC07GF273K
R42	1104	143	MF1-8 8-25K1PCTTO
R42	1104	143	MF1-8 48700FTO
R42	1105	103	RC07GF273K
R42	1103	91	RC20GF103K

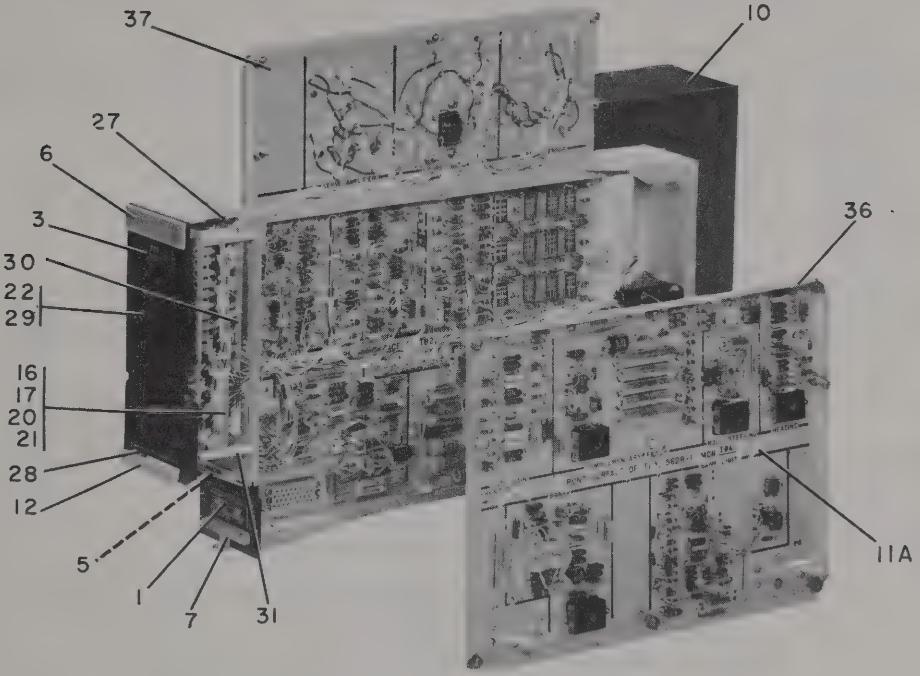
SYMBOL INDEX

SYMBOL	FIG. - ITEM		PART NUMBER
R43	1103	108	MF1-8 19-6K1PCTTO
R43	1104	133	RC20GF562K
R43	1105	101	RC07GF183K
R44	1104	124	RC07GF221K
R44	1105	68	RC07GF273K
R44	1103	70	RC20GF103K
R45	1104	127	MF1-8 2-15K1PCTTO
R45	1105	74	RC07GF273K
R45	1103	69	RC20GF103K
R46	1103	68	MF1-8 19-6K1PCTTO
R46	1104	81	RC07F103K
R46	1105	105	RC07F103K
R47	1104	73	RC07F103K
R47	1105	106	RC07GF153K
R47	1103	76	RC07GF473K
R48	1104	82	RC07F103K
R48	1105	99	RC07GF273K
R48	1103	78	RC07GF153K
R49	1104	71	RC07F103K
R49	1105	94	RC07F103K
R49	1103	73	RC07GF153K
R5	1102	7	MF1-8 28-7K1PCTTO
R5	1103	43	MF1-4 909K1PCTTO
R5	1104	61	RC07GF183K
R50	1104	67	RC20GF472K
R50	1105	95	RC07F103K
R50	1103	75	RC07GF473K
R51	1104	118	RC07F103K
R51	1105	87	RC07F103K
R51	1103	80	RC07GF473K
R52	1104	119	RC07GF472K
R52	1105	82	RC07GF153K
R52	1103	82	RC07GF104K
R53	1104	117	MF1-8 19-6K1PCTTO
R53	1105	89	RC07GF271K
R53	1103	85	RC07GF473K
R54	1104	70	MF4-8 21-5K1PCTTO
R54	1105	88	RC20GF472K
R54	1103	83	RC07GF104K
R55	1104	77	MF1-8 133K1PCTTO
R55	1104	77	MF1-8 75K1PCTTO
R55	1105	84	RC07F103K
R56	1104	144	MF1-8 422R0FTO
R56	1105	90	MF1-8 10K1PCTTO
R57	1104	175	MF1-8 5-62K1PCTTO
R57	1105	81	RC07GF153K
R58	1104	146	MF1-8 5-62K1PCTTO
R58	1105	80	RC07GF153K
R59	1104	173	MF1-8 10K1PCTTO
R59	1105	281	MF1-8 31-6K1PCTTO
R6	1102	8	MF1-8 5-11K1PCTTO
R6	1102	8	MF1-8 3-16K1PCTTO
R6	1104	64	RC07F103K
R6	1103	48	RC07F103K
R60	1104	149	MF1-8 8-25K1PCTTO
R60	1105	279	MF1-8 14-7K1PCTTO
R61	1105	280	MF1-8 10K1PCTTO
R61	1104	147	RC20GF272K
R62	1104	154	RL20S272G
R62	1105	134	RC07GF182K
R63	1104	150	MF1-8 90-9K1PCTTO
R63	1105	230	MF1-8 4-22K1PCTTO
R63	1103	163	MF1-8 1K1PCTTO
R64	1104	156	MF1-8 10K1PCTTO
R64	1105	226	RC20GF562K
R64	1103	191	RC20GF272K
R64	1103	191	RC20GF562K
R65	1104	167	MF1-8 42-2K1PCTTO
R65	1105	227	RC20GF562K
R65	1103	193	RC20GF272K
R65	1103	193	RC20GF562K
R66	1104	158	MF1-8 8-25K1PCTTO
R66	1105	270	MF1-8 8-25K1PCTTO
R66	1103	164	RC20GF562K
R67	1105	271	MF1-8 90-9K1PCTTO
R67	1103	166	RC20GF562K
R67	1104	159	RC20GF272K
R68	1104	157	MF1-8 42-2K1PCTTO
R68	1103	183	MF1-8 10K1PCPCTTO
R68	1105	274	RL20S272G
R69	1103	182	MF1-8 16-2K1PCTTO
R69	1104	161	MF1-8 46-4K1PCTTO
R69	1105	262	MF1-8 2-15K1PCTTO
R7	1104	20	RC07GF273K
R7	1103	49	RC07GF153K
R70	1105	233	MF1-8 8-25K1PCTTO
R70	1103	181	MF1-8 31-6K1PCTTO
R70	1104	162	RL20S272G
R71	1104	182	MF1-8 90-9K1PCTTO
R71	1103	180	MF1-8 68-1K1PCTTO
R71	1105	228	RC20GF472K
R72	1105	265	MF1-8 10K1PCTTO
R72	1103	179	MF1-8 133K1PCTTO
R72	1104	178	RC07GF273K
R73	1104	177	MF1-8 90-9K1PCTTO
R73	1105	229	MF1-8 2-15K1PCTTO
R73	1103	178	MF1-8 23-7K1PCTTO
R73	1103	178	MF1-8 27401FTO
R74	1104	233	MF1-4 383K1PCTTO
R74	1105	238A	MF1-8 8-11K1PCTTO
R74	1103	170	MF1-8 8-25K1PCTTO
R75	1104	232	MF1-4 1960K1PCTTO
R75	1105	243	MF1-8 10K1PCTTO
R75	1103	168	RC20GF272K
R76	1105	242	MF1-8 90-9K1PCTTO
R76	1103	174	RL20S272G
R76	1104	226	RC07F103K
R77	1105	241	MF1-8 68-1K1PCTTO
R77	1103	173	MF1-8 90-9K1PCTTO
R77	1104	224	RC07GF153K
R78	1103	177	MF1-8 61-9K1PCTTO
R78	1105	234	RC20GF272K

SYMBOL INDEX

SYMBOL	FIG. - ITEM	PART NUMBER
R78	1104 227	RC07GF273K
R79	1103 154	MF1-8 11K1PCTTO
R79	1105 260	RSM2C15500F
R79	1104 234	RC07GF273K
R8	1104 30	RC07GF823K
R8	1105 39	RC20GF273K
R8	1103 52	RC07GF153K
R80	1105 258	M51-4 1K1PCTTO
R80	1103 146	RC07F103K
R80	1104 223	RC07GF153K
R81	1105 259	M51-4 1K1PCTTO
R81	1103 145	RC07F103K
R81	1104 221	RC07F103K
R82	1103 204	MF1-8 8-25K1PCTTO
R82	1104 195	MF1-8 8-25K1PCTTO
R82	1105 246	MF1-8 8-11K1PCTTO
R83	1103 206	MF1-8 42-2K1PCTTO
R83	1105 250	MF1-8 8-11K1PCTTO
R83	1104 229	RC20GF272K
R84	1103 208	MF1-8 42-2K1PCTTO
R84	1105 255	RC07GF332K
R84	1104 198	RL20S272G
R85	1104 196	MF1-8 90-9K1PCTTO
R85	1103 148	MF1-8 42-2K1PCTTO
R86	1104 214	MF1-8 14-7K1PCTTO
R86	1103 152	RC07GF225K
R87	1104 218	MF1-8 14-7K1PCTTO
R87	1103 137	RC07GF153K
R88	1104 201	MF1-8 8-25K1PCTTO
R88	1103 138	RC07F103K
R89	1103 155	MF1-8 23-7K1PCTTO
R89	1104 208	RC20GF272K
R9	1104 31	RC07GF104K
R9	1104 31	RC07GF273K
R9	1105 21	RC20GF273K
R9	1103 47	RC07F103K
R90	1103 156	MF1-8 34-8K1PCTTO
R90	1104 205	RL20S272G
R91	1104 202	MF1-8 90-9K1PCTTO
R91	1103 157	MF1-8 68-1K1PCTTO
R92	1104 206	MF1-8 6-19K1PCTTO
R92	1103 158	MF1-8 133K1PCTTO
R93	1104 248	MF1-8 8-25K1PCTTO
R93	1103 159	MF1-8 287K1PCTTO
R93	1105 306A	RW69V181
R94	1105 306	RSM2C10R00F
R94	1103 234	RC20GF272K
R94	1104 249	RC20GF272K
R95	1105 293	MF1-8 19-6K1PCTTO
R95	1105 293	MF4-8 21-5K1PCTTO
R95	1105 293	MF1-8 23-7K1PCTTO
R95	1105 293	MF1-8 26-1K1PCTTO
R95	1105 293	MF1-8 28-7K1PCTTO
R95	1105 293	MF1-8 31-6K1PCTTO
R95	1105 293	MF1-8 34-8K1PCTTO
R95	1105 293	MF1-8 38-3K1PCTTO
R95	1105 293	MF1-8 42-2K1PCTTO
R95	1105 293	MF1-8 46-4K1PCTTO
R95	1105 293	MF1-8 51-1K1PCTTO
R95	1105 293	MF1-8 56-2K1PCTTO
R95	1105 293	MF1-8 61-9K1PCTTO
R95	1105 293	MF1-8 68-1K1PCTTO
R95	1105 293	MF1-8 75K1PCTTO
R95	1105 293	MF1-8 82-5K1PCTTO
R95	1105 293	MF1-8 90-9K1PCTTO
R95	1105 293	MF1-8 100K1PCTTO
R95	1105 293	MF1-8 110K1PCTTO
R95	1105 293	MF1-8 121K1PCTTO
R95	1105 293	MF1-8 133K1PCTTO
R95	1105 293	MF1-8 147K1PCTTO
R95	1105 293	MF1-8 162K1PCTTO
R95	1105 293	MF1-8 178K1PCTTO
R95	1105 293	MF1-8 196K1PCTTO
R95	1103 135	MF1-8 34-8K1PCTTO
R95	1104 252	RL20S272G
R96	1104 250	MF1-8 90-9K1PCTTO
R96	1105 294	RL20S153G
R96	1103 233	RL20S272G
R97	1103 232	MF1-8 100K1PCTTO
R97	1104 257	MF1-8 10K1PCTTO
R97	1105 295	RL20S272G
R97	1103 232	RC07GF154K
R98	1104 256	MF1-8 162K1PCTTO
R98	1105 312	RSM2C10R00F
R98	1105 312	RW69V270
R98	1103 260	RC07GF153K
R99	1105 290	RSM2C10000J
R99	1103 262	RC07F103K
R99	1104 242	RSM2C22500F
TB1	1104 0	761-7488-001
TB1	1101 37	761-7488-001
TB2	1105 0	761-7490-001
TB2	1101 48	761-7490-001
TB3	1101 36	761-7492-001
TB3	1103 0	761-7492-001
TB4	1102 12	761-7485-001
TB5	1102 25	761-7486-001
T1	1104 26	DH226
T1	1101 66	BC3257
T1	1101 66	T50508
T1	1103 63	DH226
T2	1104 97	BC3255
T2	1103 92	BC3255
T3	1105 248	DH226
T3	1103 186	BC3255
T4	1103 142	BC3255
T4	1104 172	ER490
T5	1104 164	BC3255
T5	1103 126	BC3256
T6	1103 189	DH226
T7	1103 159A	DH226

GROUP ASSEMBLY PARTS LIST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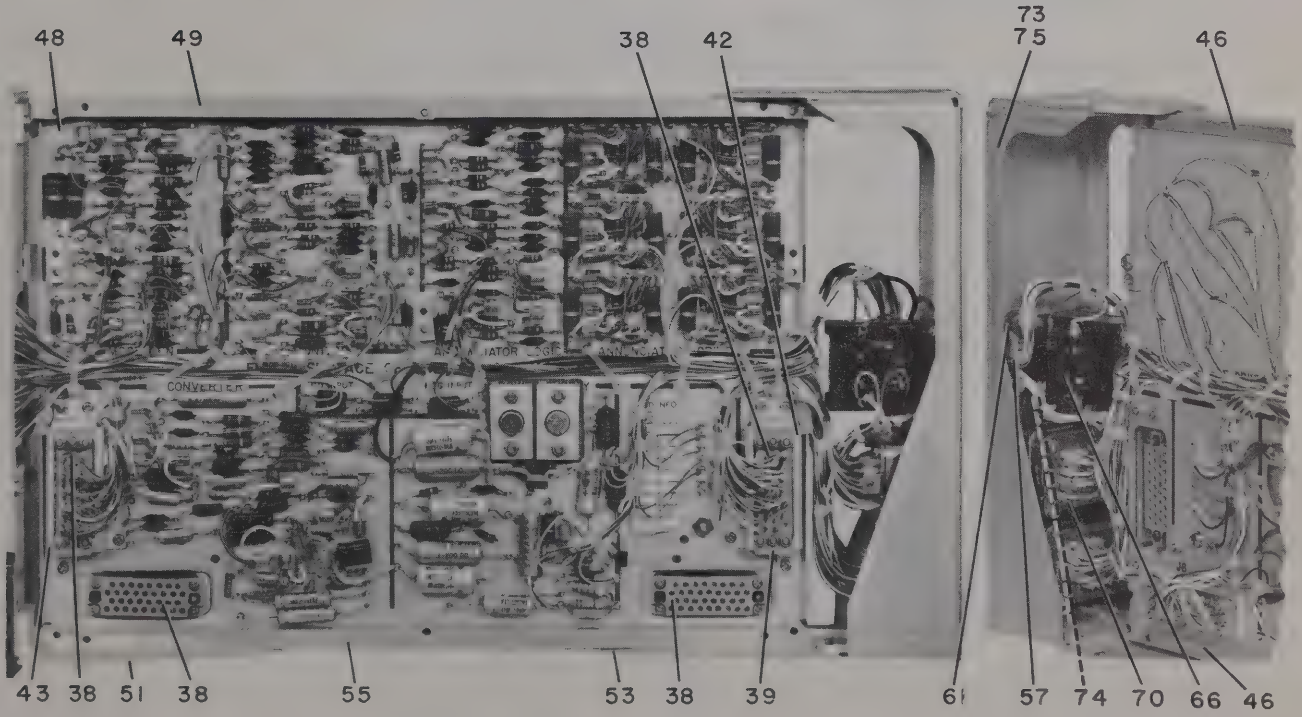
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562R-1 Roll Steering Computer
Figure 1101

GROUP ASSEMBLY PARTS LIST

	FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
	1101 - 0	522-3713-001	1	STEERING COMPUTER 562R-1	1	A
	- 0	522-3713-003	1	STEERING COMPUTER 562R-1	1	B
	- 0	522-3713-005	1	STEERING COMPUTER 562R-1	1	C
	- 0	522-3713-006	1	STEERING COMPUTER 562R-1	1	D
	- 0	522-3713-007	1	STEERING COMPUTER 562R-1	1	E
	- 0	522-3713-009	1	STEERING COMPUTER 562R-1	1	F
	- 0	522-3713-011	1	STEERING COMPUTER 562R-1	1	G
R	- 0	522-3713-012	1	STEERING COMPUTER 562R-1	1	H
R	- 0	522-3713-015	1	STEERING COMPUTER 562R-1	1	J
R	- 0	522-3713-017	1	STEERING COMPUTER 562R-1	1	K
R	- 0	522-3713-021	1	STEERING COMPUTER 562R-1	1	L
	1	761-3405-001	2	PLATE, IDENT	1	
	- 2	P347-1268-000	2	SCREW, MACH., SST, FIL H, 2-56 X 1/8 77250 347-1268-000 AP	2	
	3	761-3407-001	2	PLATE, IDENT	1	
	- 4	P347-1268-000	2	SCREW, MACH., SST, FIL H, 2-56 X 1/8 77250 347-1268-000 AP	2	
	5	280-3778-010	2	CHART, INFORMATION 93108	1	
R	5	280-3778-020	2	CHART, INFORMATION 93108	1	
	6	761-5240-001	2	STRIP, IDENT	1	
	7	761-3351-002	2	HOOK, HOLD DOWN P	1	
	- 8	MS51957-15	2	SCREW, MACH., SST, PAN HD, 4-40 X 3/8 343-0135-000 AP	2	
	- 9	4704-04-01-4102	2	WASHER, LOCK, SST, 0.124 ID, 0.275 OD 78189 373-0154-000 AP	2	
R	10	761-3386-001	2	COVER, ELECTRICAL EQUIP.	1	
	- 11	MS51957-27	2	SCREW, MACH., SST, PAN HD, 6-32 X 5/16 343-0168-000 AP	1	
R	11A	MS17821-4-9	2	CLAMP 435-1169-100	18	
	12	757-3422-002	2	HANDLE	1	
	- 13	F22NM107-62	2	NUT, SELF-LKG, HEX., CAD. PL STL, 6-32 72962 333-1069-000 AP	2	
R	- 14	302-0638-020	2	WASHER, NM, RUB., 0.195 ID, 0.375 OD COML AP	4	
	- 15	761-5190-001	2	PIN, HINGE	2	
	16	220-679	2	CONTACT 02660 372-5387-000	104	
	17	761-7393-001	2	SHELL, ELECTRICAL CONN	1	
	- 18	MS51957-5	2	SCREW, MACH., SST, PAN HD, 2-56 X 3/8 343-0126-000 AP	2	
	- 19	310-6320-000	2	WASHER, FLAT, SST, 0.092 ID, 0.219 OD COML AP	2	
	20	554-2736-002	3	STANDOFF, SHOULDERED P	2	
	21	220-699-01	3	CONNECTOR 02660 372-5386-000 J2	1	
	22	761-7494-001	2	PANEL, FRONT	1	
	- 23	MS51959-13	2	SCREW, MACH., SST, FH, 4-40 X 1/4 342-0044-000 AP	1	
	- 24	P330-2290-000	2	SCREW, MACH., SST, FH, 4-40 X 1/4 77250 330-2290-000 AP	2	
	- 25	MS51957-15	2	SCREW, MACH., SST, PAN HD, 4-40 X 3/8 343-0135-000 AP	4	
	- 26	MS35338-78	2	WASHER, LOCK, SST, 0.115 ID, 0.212 OD 310-0279-000 AP	4	
	27	F22NCFMA2-40	3	NUT, SELF-LKG, CLINCH, CAD. PL STL, 4-40 72962 333-0840-000	2	

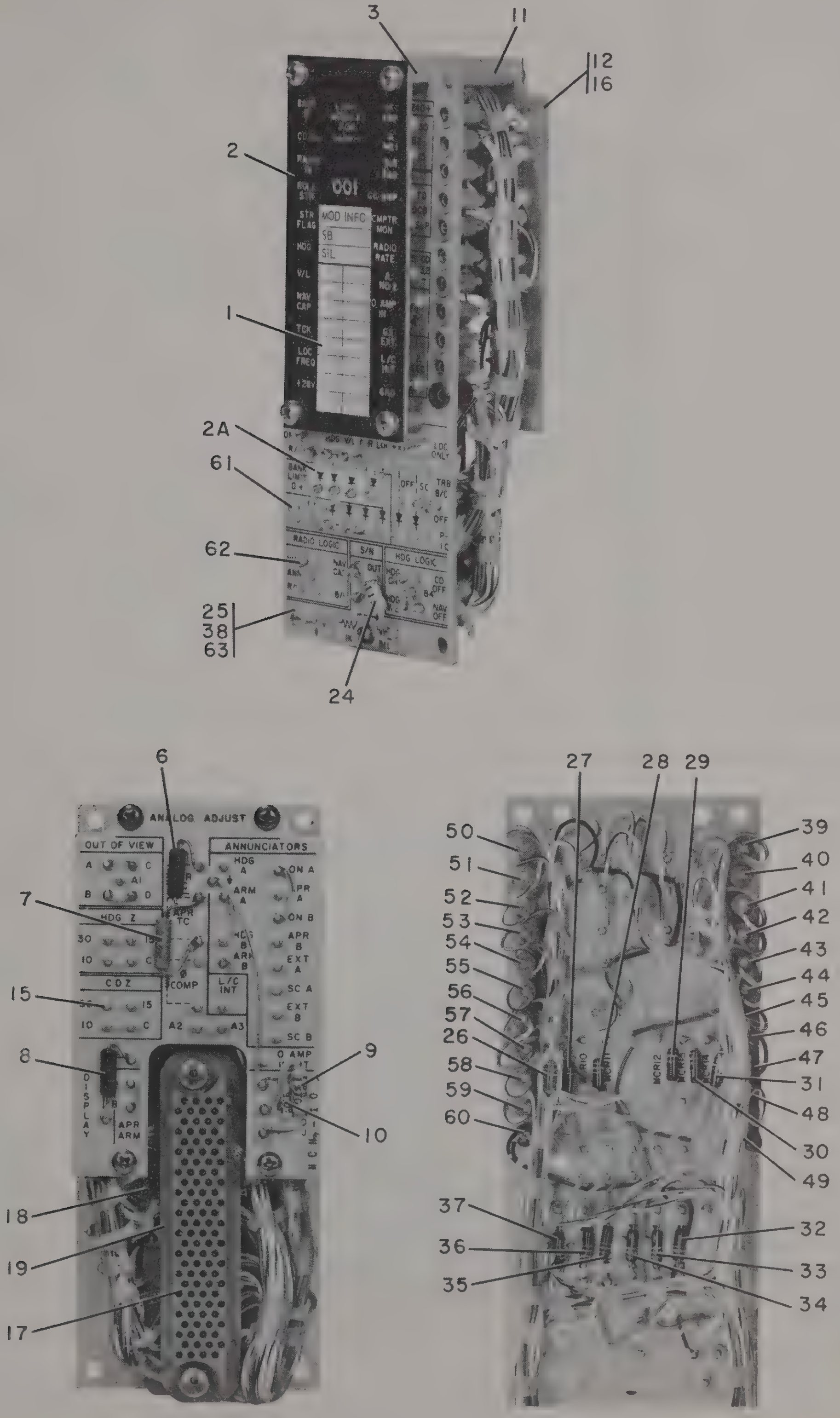
GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
1101 28	761-5187-001	3	BUMPER, RUB.	2	
29	761-3413-005	3	PANEL, FRONT P	1	
30	761-7484-001	2	ANALOG ADJUST SUBASSEMBLY SEE FIG. 1102-0	1	A
30	761-7484-003	2	ANALOG ADJUST SUBASSEMBLY SEE FIG. 1102-0	1	B
30	761-7484-005	2	ANALOG ADJUST SUBASSEMBLY SEE FIG. 1102-0	1	C
30	761-7484-006	2	ANALOG ADJUST SUBASSEMBLY SEE FIG. 1102-0	1	D
30	761-7484-007	2	ANALOG ADJUST SUBASSEMBLY SEE FIG. 1102-0	1	E
30	761-7484-009	2	ANALOG ADJUST SUBASSEMBLY SEE FIG. 1102-0	1	F
30	761-7484-011	2	ANALOG ADJUST SUBASSEMBLY SEE FIG. 1102-0	1	G
31	542-6162-002	2	POST, SPACING	4	
- 32	MS51957-17	2	SCREW, MACH., SST, PAN HD, 4-40 X 1/2 343-0137-000 AP FOR 30 AND 31	2	
- 33	MS51957-13	2	SCREW, MACH., SST, PAN HD, 4-40 X 1/4 343-0133-000 AP FOR 30 AND 31	4	
- 34	MS51957-15	2	SCREW, MACH., SST, PAN HD, 4-40 X 3/8 343-0135-000 AP FOR 30 AND 31	2	
- 35	MS35338-78	2	WASHER, LOCK, SST, 0.115 ID, 0.212 OD 310-0279-000 AP FOR 30 AND 31	10	
36	761-7492-001	2	STEERING COMPUTER SUBASSEMBLY, NO. 3 SEE FIG. 1103 TB3	1	
37	761-7488-001	2	STEERING COMPUTER SUBASSEMBLY, NO. 1 SEE FIG. 1104-0 TB1	1	
38	SRM34SNSS0000	2	CONNECTOR 81312 372-5856-020 J3-J6	4	
39	761-3404-001	2	MOUNT, CONN P	8	
- 40	68-1660-26	2	NUT, SELF-LKG, HEX., AL, 2-56 72962 333-0604-000 AP FOR 38 AND 39	16	
- 41	MS51957-5	2	SCREW, MACH., SST, PAN HD, 2-56 X 3/8 343-0126-000 AP FOR 38 AND 39	16	
42	761-3400-001	2	BRACKET, CONN, RIGHT P	1	
43	761-3401-001	2	BRACKET, CONN, LEFT P	1	
R - 44	68-1660-26	2	NUT, SELF-LKG, HEX., AL, 2-56 72962 333-0604-000 EFF THRU MCN 300 AP FOR 42 AND 43	8	
- 45	MS51957-3	2	SCREW, MACH., SST, PAN HD, 2-56 X 1/4 343-0124-000 AP FOR 42 AND 43	8	
46	761-3403-001	2	BAR, SUPPORT P	2	
- 47	MS51959-15	2	SCREW, MACH., SST, FH, 4-40 X 3/8 342-0046-000 AP	4	
48	761-7490-001	2	STEERING COMPUTER SUBASSEMBLY, NO. 2 SEE FIG. 1105-0 TB2	1	

GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
1101 49	761-3411-004	2	BAR, SUPPORT P	1	
- 50	P330-2291-000	2	SCREW, MACH., SST, FH, 4-40 X 5/16 77250 330-2291-000 AP	5	
51	761-3457-001	2	SUPPORT, CHASSIS P	1	
- 52	MS51959-12	2	SCREW, MACH., SST, FH, 4-40 X 3/16 342-0043-000 AP	4	
53	761-3458-001	2	SUPPORT, CHASSIS P	1	
- 54	MS51959-12	2	SCREW, MACH., SST, FH, 4-40 X 3/16 342-0043-000 AP	4	
55	761-3412-004	2	BAR, SUPPORT P	1	
- 56	MS51959-12	2	SCREW, MACH., SST, FH, 4-40 X 3/16 342-0043-000 AP	3	
57	547-5305-002	2	TERMINAL, LUG	1	
- 58	68-1660-40	2	NUT, SELF-LKG, HEX., AL, 4-40 72962 333-0605-000 AP	1	
- 59	1804-00	2	WASHER, LOCK, CAD. PL BRZ, 0.123 ID, 0.255 OD 78189 373-7010-000 AP	1	
- 60	P342-0152-000	2	SCREW, MACH., NI PL BRS, FH, 4-40 X 1/4 77250 342-0152-000 AP	1	
61	SPL4040-2HOT TINNED	2	TERMINAL 77147 304-0331-000	1	
- 62	P313-0050-000	2	NUT, PLAIN, HEX., NI PL BRS, 2-56 77250 313-0050-000 AP	1	
- 63	1902-00CADPL	2	WASHER, LOCK, CAD. PL BRZ, 0.095 ID, 0.185 OD 78189 373-3120-000 AP	1	
- 64	310-0079-000	2	WASHER, LOCK, BRZ, 0.168 ID, 0.296 OD COML AP	1	
- 65	P342-0143-000	2	SCREW, MACH., NI PL BRS, FH, 2-56 X 1/4 77250 342-0143-000 AP	1	
R 66	BC3257	2	TRANSFORMER 97315 672-0150-000 T1	1	A,D E
66	T50508	2	TRANSFORMER 96256 672-0151-000 T1	1	B,C
- 67	68-1660-40	2	NUT, SELF-LKG, HEX., AL, 4-40 72962 333-0605-000 AP	4	
- 68	541-6021-002	2	SPACER, SLV AP	4	
- 69	P330-2294-000	2	SCREW, MACH., SST, FH, 4-40 X 1/2 77250 330-2294-000 AP	4	
70	DRX2-57P57P34B02	2	CONNECTOR 71468 370-5293-000 P1	1	
- 71	68-1660-40	2	NUT, SELF-LKG, HEX., AL, 4-40 72962 333-0605-000 AP	4	
- 72	P330-2292-000	2	SCREW, MACH., SST, FH, 4-40 X 3/8 77250 330-2292-000 AP	4	
73	761-7495-001	2	CHASSIS, ELECTRICAL EQUIP.	1	
74	F12NCFMA1-62	3	NUT, SELF-LKG, CLINCH, CAD. PL STL, 6-32 72962 333-0841-000	1	
75	761-3414-003	3	CHASSIS, REAR P	1	

GROUP ASSEMBLY PARTS LIST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OUT OF VIEW
ANNUNCIATORS
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HDG Z
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CDZ
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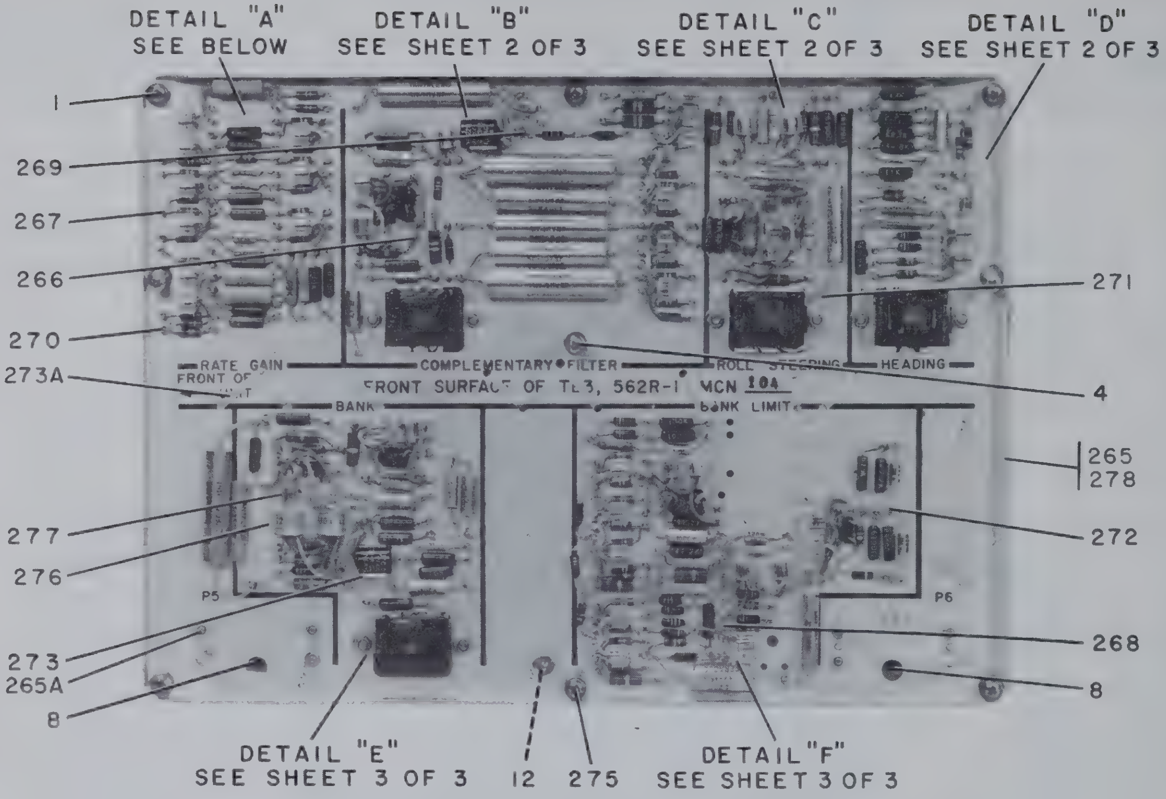
Roll Analog Adjust Subassembly
Figure 1102

GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
1102 - 0	761-7484-001	1	ANALOG ADJUST SUBASSEMBLY SEE FIG. 1101-30 FOR NHA		REF	A
- 0	761-7484-003	1	ANALOG ADJUST SUBASSEMBLY SEE FIG. 1101-30 FOR NHA		REF	B
- 0	761-7484-005	1	ANALOG ADJUST SUBASSEMBLY SEE FIG. 1101-30 FOR NHA		REF	C
- 0	761-7484-006	1	ANALOG ADJUST SUBASSEMBLY SEE FIG. 1101-30 FOR NHA		REF	D
- 0	761-7484-007	1	ANALOG ADJUST SUBASSEMBLY SEE FIG. 1101-30 FOR NHA		REF	E
- 0	761-7484-009	1	ANALOG ADJUST SUBASSEMBLY SEE FIG. 1101-30 FOR NHA		REF	F
- 0	761-7484-011	1	ANALOG ADJUST SUBASSEMBLY SEE FIG. 1101-30 FOR NHA		REF	G
1	280-3778-010	2	CHART, INFORMATION 93108		1	
R 1	280-3778-020	2	CHART, INFORMATION 93108		1	
2	761-8787-001	2	PLATE, IDENT		1	A
2	761-8787-003	2	PLATE, IDENT		1	B
2	761-8787-005	2	PLATE, IDENT		1	C
2	761-8787-006	2	PLATE, IDENT		1	D
2	761-8787-007	2	PLATE, IDENT		1	E
2	761-8787-009	2	PLATE, IDENT		1	F
2	761-8787-011	2	PLATE, IDENT		1	G
2A	768-1032-001	2	PLATE, DESIGNATION SB-6		1	
3	554-5849-001	2	POST, ELECTRICAL-MECHANICAL EQUIP.		4	
- 4	MS51957-12	2	SCREW, MACH., SST, PAN HD, 4-40 X 3/16 343-0132-000 AP FOR 1 THRU 3		4	
- 5	MS35338-78	2	WASHER, LOCK, SST, 0.115 ID, 0.212 OD 310-0279-000 AP FOR 1 THRU 3		4	
6	MF1-8 261K1P CTTO	2	RESISTOR, FXD, 0.261 MEG 1%, 1/8 W 91637 705-0681-000	R4	1	
7	MF1-8 28-7K1 PCTTO	2	RESISTOR, FXD, 28,700 OHMS 1%, 1/8 W 91637 705-0658-000	R5	1	
R 8	MF1-8 5-11K1 PCTTO	2	RESISTOR, FXD, 5110 OHMS 1%, 1/8 W 91637 705-0640-000	R6	1	B,D F
R 8	MF1-8 3-16K1 PCTTC	2	RESISTOR, FXD, 3160 OHMS 1%, 1/8 W 91637 705-0635-000 EFF MCN 826 SB-17	R6	1	A,C E,G
R 9	MF1-8 5-62K1 PCTTO	2	RESISTOR, FXD, 5620 OHMS 1%, 1/8 W 91637 705-0641-000	R2	1	
R 10	MF1-8 3-48K1 PCTTO	2	RESISTOR, FXD, 3480 OHMS 1%, 1/8 W 91637 705-0636-000	R3	1	
11	554-5848-001	2	POST, ELECTRICAL-MECHANICAL EQUIP.		4	
12	761-7485-001	2	TERMINAL BOARD	TB4	1	
- 13	MS51957-12	2	SCREW, MACH., SST, PAN HD, 4-40 X 3/16 343-0132-000 AP FOR 11 AND 12		4	

GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
1102 - 14	MS35338-78	2	WASHER, LOCK, SST, 0.115 ID, 0.212 OD 310-0279-000 AP FOR 11 AND 12	4	
15	SL208-231	3	TERMINAL 12615 306-2410-000	42	
16	554-5786-008	3	TERMINAL BOARD	1	
17	220-692	2	PIN CONTACT 02660 372-5377-000	94	
18	554-5788-003	2	INSULATOR, PLATE	1	
19	554-2738-002	2	SHELL, ELECTRICAL CONN P P2	1	
- 20	MS51957-10	2	SCREW, MACH., SST, PAN HD, 2-56 X 7/8 343-0130-000 AP FOR 18 AND 19	2	
- 21	MS35338-77	2	WASHER, LOCK, SST, 0.088 ID, 0.175 OD 310-0275-000 AP FOR 18 AND 19	2	
- 22	541-5955-002	2	SPACER, SLV AP FOR 18 AND 19	2	
- 23	220-544	2	WASHER, CUP 02660 372-5381-000 AP FOR 18 AND 19	2	
24	MF1-8 511ROF TO	2	RESISTOR, FXD, 511 OHMS 1%, 1/8 W 91637 724-0078-000 R1	1	
25	761-7486-001	2	ELECTRONIC COMPONENTS ASSY TB5	1	
26	1N645	3	SEMICOND DEVICE 353-2607-000 CR9	1	
27	1N645	3	SEMICOND DEVICE 353-2607-000 CR10	1	
28	1N645	3	SEMICOND DEVICE 353-2607-000 CR11	1	
29	1N645	3	SEMICOND DEVICE 353-2607-000 CR12	1	
30	1N645	3	SEMICOND DEVICE 353-2607-000 CR13	1	
31	1N645	3	SEMICOND DEVICE 353-2607-000 CR14	1	
32	1N645	3	SEMICOND DEVICE 353-2607-000 CR7	1	
33	1N645	3	SEMICOND DEVICE 353-2607-000 CR6	1	
34	1N645	3	SEMICOND DEVICE 353-2607-000 CR5	1	
35	1N645	3	SEMICOND DEVICE 353-2607-000 CR4	1	
36	1N645	3	SEMICOND DEVICE 353-2607-000 CR3	1	
37	1N645	3	SEMICOND DEVICE 353-2607-000 CR2	1	
38	761-7487-001	3	TERMINAL BOARD	1	
39	SKT41BLU	4	JACK 98291 360-0263-000 J23	1	
40	SKT41BLU	4	JACK 98291 360-0263-000 J22	1	
41	SKT41BLU	4	JACK 98291 360-0263-000 J21	1	
42	SKT41BLU	4	JACK 98291 360-0263-000 J20	1	
43	SKT41RED	4	JACK 98291 360-0259-000 J19	1	
44	SKT41BLU	4	JACK 98291 360-0263-000 J18	1	
45	SKT41RED	4	JACK 98291 360-0259-000 J17	1	
46	SKT41RED	4	JACK 98291 360-0259-000 J16	1	
47	SKT41RED	4	JACK 98291 360-0259-000 J15	1	
48	SKT41RED	4	JACK 98291 360-0259-000 J14	1	
49	SKT41BLK	4	JACK 98291 360-0257-000 J13	1	
50	SKT41BLU	4	JACK 98291 360-0263-000 J12	1	
51	SKT41BLU	4	JACK 98291 360-0263-000 J11	1	
52	SKT41BLU	4	JACK 98291 360-0263-000 J10	1	
53	SKT41BLU	4	JACK 98291 360-0263-000 J9	1	
54	SKT41RED	4	JACK 98291 360-0259-000 J8	1	
55	SKT41RED	4	JACK 98291 360-0259-000 J7	1	
56	SKT41RED	4	JACK 98291 360-0259-000 J6	1	
57	SKT41RED	4	JACK 98291 360-0259-000 J5	1	
58	SKT41RED	4	JACK 98291 360-0259-000 J4	1	
59	SKT41RED	4	JACK 98291 360-0259-000 J3	1	
60	SKT41RED	4	JACK 98291 360-0259-000 J2	1	
61	DP420-231WHT	4	TERMINAL 21242 306-2465-000	8	
62	SL208-231	4	TERMINAL 12615 306-2410-000	80	
63	554-5785-005	4	TERMINAL BOARD	1	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SEE SHEET 2 OF 3
DETAIL "C"
SEE SHEET 2 OF 3
DETAIL "D"
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RATE GAIN
COMPLEMENTARY FILTER
ROLL STEERING
HEADING
FRONT OF UNIT
FRONT SURFACE OF TB3, 562R-1 MCN 104
BANK
BANK LIMIT
P5
P6
DETAIL "E"
SEE SHEET 3 OF 3
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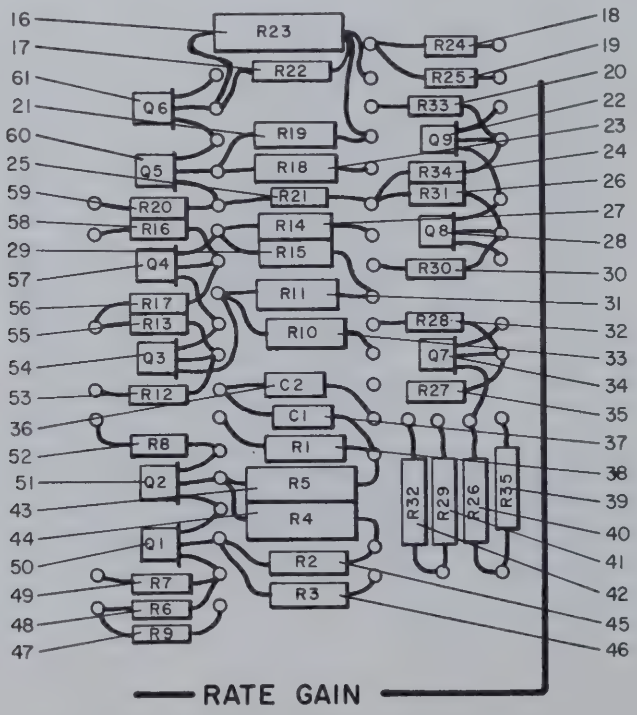
DETAIL "F"
SEE SHEET 3 OF 3

DETAIL A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R32
R29
R26
R35
Q1
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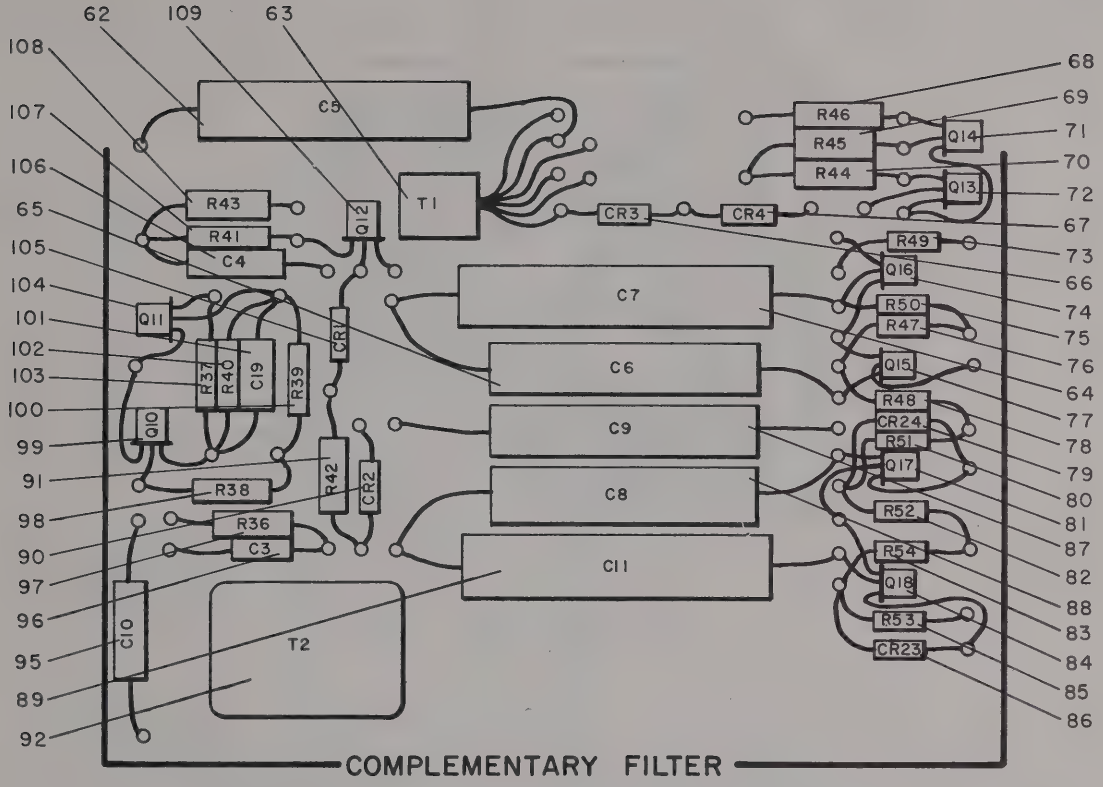
RATE GAIN

Roll Steering Computer Subassembly No. 3 (Sheet 1 of 3)
Figure 1103

GROUP ASSEMBLY PARTS LIST

DETAIL B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Q10
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CR2
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R36
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CR4
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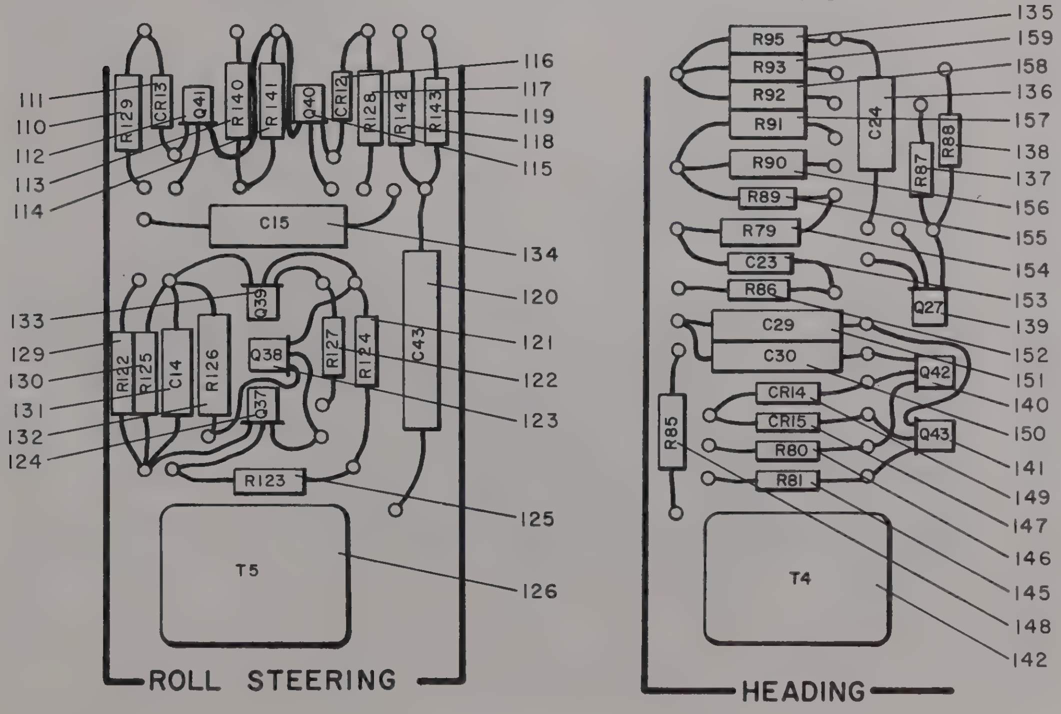
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Q38
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Q37
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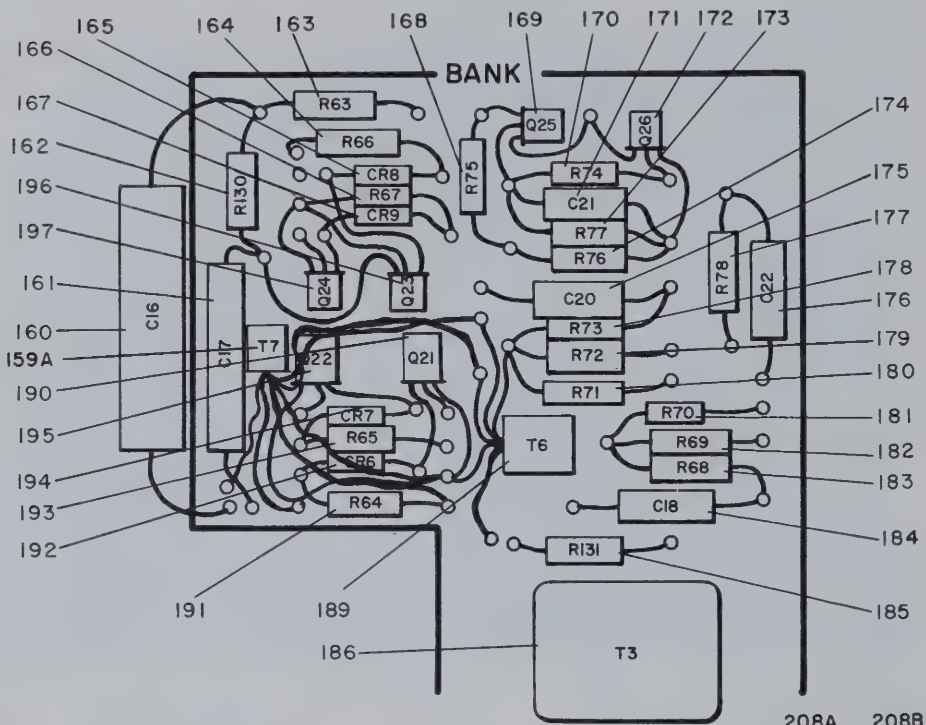
HEADING

DETAIL C

DETAIL D

Roll Steering Computer Subassembly No. 3 (Sheet 2 of 3)
Figure 1103

DETAIL E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CR8
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CR9
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R77
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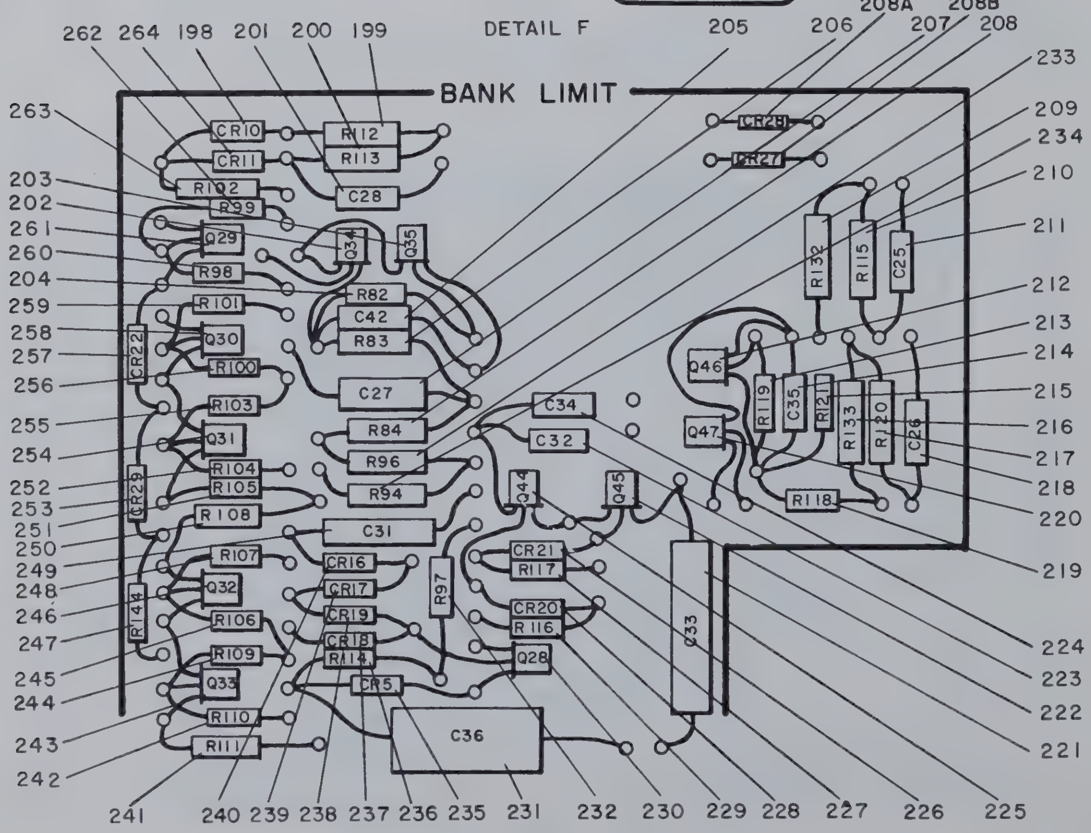
DETAIL F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C26
R118
C34
C32
Q44
Q45
CR21
R117
CR20
R116
Q28
C33

Roll Steering Computer Subassembly No. 3 (Sheet 3 of 3)
Figure 1103

GROUP ASSEMBLY PARTS LIST

	FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
	1103 - 0	761-7492-001	1	STEERING COMPUTER SUBASSEMBLY, NO. 3 SEE FIG. 1101-36 FOR NHA TB3	REF	
	1	MS51957-17	2	SCREW, MACH., SST, PAN HD, 4-40 X 1/2 343-0137-000	6	
	- 2	340-0644-000	2	SLEEVE, SPG 91314 AP	6	
	- 3	4704-04-01-4102	2	WASHER, LOCK, SST, 0.124 ID, 0.275 OD 78189 373-0154-000 AP	6	
	4	P343-2642-000	2	SCREW, MACH., SST, PAN HD, 4-40 X 13/16 77250 343-2642-000	3	
	- 5	340-0644-000	2	SLEEVE, SPG 91314 AP	3	
	- 6	4704-04-01-4102	2	WASHER, LOCK, SST, 0.124 ID, 0.275 OD 78189 373-0154-000 AP	3	
	- 7	541-5969-002	2	SPACER, SLV AP	3	
	8	XSRM34PNSS1000	2	CONNECTOR 81312 372-5855-010 P5,P6	2	
R	- 9	68NM26	2	NUT, SELF-LKG, HEX., AL, 2-56 72962 333-0327-000 EFF THRU MCN 300 AP	8	
	- 10	541-5954-002	2	SPACER, SLV AP	8	
R	- 10A	502-1516-002	2	SPACER AP	2	
	- 11	P347-0001-000	2	SCREW, MACH., SST, FIL H, 2-56 X 5/8 77250 347-0001-000 AP	8	
	12	4007-4HOTTINNED	2	TERMINAL 77147 304-0015-000	1	
	- 13	P313-0051-000	2	NUT, PLAIN, HEX., NI PL BRS, 4-40 77250 313-0051-000 AP	1	
	- 14	310-0076-000	2	WASHER, LOCK, BRZ, 0.115 ID, 0.212 OD COML AP	1	
	- 15	P343-0285-000	2	SCREW, MACH., NI PL BRS, PAN HD, 4-40 X 1/4 77250 343-0285-000 AP	1	
	16	MF1-4 1000K1PCTTO	2	RESISTOR, FXD, 1 MEG 1%, 1/4 W 91637 724-0538-000 R23	1	
	17	MF1-4 1000K1PCTTO	2	RESISTOR, FXD, 1 MEG 1%, 1/4 W 91637 724-0538-000 R22	1	
	18	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R24	1	
	19	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R25	1	
	20	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R33	1	
	21	MF1-8 46402FTO	2	RESISTOR, FXD, 0.464 MEG 1%, 1/8 W 91637 724-0159-000 R19	1	
	22	2N718A	2	TRANSISTOR 352-0318-000 Q9	1	
	23	MF1-8 46402FTO	2	RESISTOR, FXD, 0.464 MEG 1%, 1/8 W 91637 724-0159-000 R18	1	
	24	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R34	1	
	25	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R21	1	
	26	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R31	1	
	27	MF1-8 237K1PCTTO	2	RESISTOR, FXD, 0.237 MEG 1%, 1/8 W 91637 705-0680-000 R14	1	
	28	2N718A	2	TRANSISTOR 352-0318-000 Q8	1	

GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
1103 29	MF1-8 237K1P CTTO	2	RESISTOR, FXD, 0.237 MEG 1%, 1/8 W 91637 705-0680-000 R15	1	
30	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R30	1	
31	MF1-8 121K1P CTTO	2	RESISTOR, FXD, 0.121 MEG 1%, 1/8 W 91637 705-0673-000 R11	1	
32	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R28	1	
33	MF1-8 121K1P CTTO	2	RESISTOR, FXD, 0.121 MEG 1%, 1/8 W 91637 705-0673-000 R10	1	
34	2N718A	2	TRANSISTOR 352-0318-000 Q7	1	
35	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R27	1	
36	150D104X0035 A2	2	CAPACITOR, FXD, 0.10 UF 20%, 35 VDCW 56289 184-7408-000 C2	1	
37	150D104X0035 A2	2	CAPACITOR, FXD, 0.10 UF 20%, 35 VDCW 56289 184-7408-000 C1	1	
38	MF1-8 422K1P CTTO	2	RESISTOR, FXD, 0.422 MEG 1%, 1/8 W 91637 705-0686-000 R1	1	
39	MF1-8 316K1P CTTO	2	RESISTOR, FXD, 0.316 MEG 1%, 1/8 W 91637 705-0683-000 R35	1	
40	MF1-8 110K1P CTTO	2	RESISTOR, FXD, 0.11 MEG 1%, 1/8 W 91637 705-0672-000 R26	1	
41	MF1-8 287K1P CTTO	2	RESISTOR, FXD, 0.287 MEG 1%, 1/8 W 91637 705-0682-000 R29	1	
42	MF1-8 61902F TO	2	RESISTOR, FXD, 0.619 MEG 1%, 1/8 W 91637 724-0165-000 R32	1	
43	MF1-4 909K1P CTTO	2	RESISTOR, FXD, 0.909 MEG 1%, 1/4 W 91637 724-0536-000 R5	1	
44	MF1-4 562K1P CTTO	2	RESISTOR, FXD, 0.562 MEG 1%, 1/4 W 91637 724-0529-000 R4	1	
45	MF1-8 348K1P CTTO	2	RESISTOR, FXD, 0.348 MEG 1%, 1/8 W 91637 705-0684-000 R2	1	
46	MF1-8 383K1P CTTO	2	RESISTOR, FXD, 0.383 MEG 1%, 1/8 W 91637 705-0685-000 R3	1	
47	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R9	1	
48	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R6	1	
49	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R7	1	
50	2N718A	2	TRANSISTOR 352-0318-000 Q1	1	
51	2N718A	2	TRANSISTOR 352-0318-000 Q2	1	
52	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R8	1	
53	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R12	1	
54	2N718A	2	TRANSISTOR 352-0318-000 Q3	1	
55	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R13	1	
56	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R17	1	
57	2N718A	2	TRANSISTOR 352-0318-000 Q4	1	
58	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R16	1	

GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
1103 59	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R20	1	
60	2N718A	2	TRANSISTOR 352-0318-000 Q5	1	
61	2N718A	2	TRANSISTOR 352-0318-000 Q6	1	
62	151D506X5010 Y2	2	CAPACITOR, FXD, 50 UF 5%, 10 VDCW 56289 184-8372-000 C5	1	
63	DH226	2	TRANSFORMER 80223 677-1485-000 T1	1	
64	151D117X5010 Z2	2	CAPACITOR, FXD, 110 UF 5%, 10 VDCW 56289 184-8373-000 C7	1	
65	151D506X5010 Y2	2	CAPACITOR, FXD, 50 UF 5%, 10 VDCW 56289 184-8372-000 C6	1	
66	1N645	2	SEMICOND DEVICE 353-2607-000 CR3	1	
67	1N749A	2	SEMICOND DEVICE, ZENER DIO, 4.3 V 5% 353-2706-000 CR4	1	
68	MF1-8 19-6K1 PCTTO	2	RESISTOR, FXD, 19,600 OHMS 1%, 1/8 W 91637 705-0654-000 R46	1	
69	RC20GF103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/2 W 745-1394-000 R45	1	
70	RC20GF103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/2 W 745-1394-000 R44	1	
71	2N718A	2	TRANSISTOR 352-0318-000 Q14	1	
72	2N718A	2	TRANSISTOR 352-0318-000 Q13	1	
73	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R49	1	
74	2N2907	2	TRANSISTOR 352-0551-000 DELETED BY SB-4 Q16	1	
74	MM2186	2	TRANSISTOR 04713 352-0551-020 SB-5 Q16	1	
75	RC07GF473K	2	RESISTOR, FXD, 47,000 OHMS 10%, 1/4 W 745-0809-000 R50	1	
76	RC07GF473K	2	RESISTOR, FXD, 47,000 OHMS 10%, 1/4 W 745-0809-000 R47	1	
77	2N2907	2	TRANSISTOR 352-0551-000 DELETED BY SB-4 Q15	1	
77	MM2186	2	TRANSISTOR 04713 352-0551-020 SB-5 Q15	1	
78	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R48	1	
79	1N645	2	SEMICOND DEVICE 353-2607-000 CR24	1	
80	RC07GF473K	2	RESISTOR, FXD, 47,000 OHMS 10%, 1/4 W 745-0809-000 R51	1	
81	2N2907	2	TRANSISTOR 352-0551-000 Q17	1	
82	RC07GF104K	2	RESISTOR, FXD, 0.1 MEG 10%, 1/4 W 745-0821-000 R52	1	
83	RC07GF104K	2	RESISTOR, FXD, 0.1 MEG 10%, 1/4 W 745-0821-000 R54	1	
R 84	2N2907	2	TRANSISTOR 352-0551-000 EFF THRU MCN 284 Q18	1	
R 84	2N3440	2	TRANSISTOR 352-0603-010 EFF MCN 285 Q18	1	
85	RC07GF473K	2	RESISTOR, FXD, 47,000 OHMS 10%, 1/4 W 745-0809-000 R53	1	
86	1N645	2	SEMICOND DEVICE 353-2607-000 CR23	1	
87	151D506X5010 Y2	2	CAPACITOR, FXD, 50 UF 5%, 10 VDCW 56289 184-8372-000 C9	1	

GROUP ASSEMBLY PARTS LIST

	FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
	1103 88	151D506X5010Y2	2	CAPACITOR, FXD, 50 UF 5%, 10 VDCW 56289 184-8372-000	C8	1	
	89	151D117X5010Z2	2	CAPACITOR, FXD, 110 UF 5%, 10 VDCW 56289 184-8373-000	C11	1	
	90	1N749A	2	SEMICOND DEVICE, ZENER DIO, 4.3 V 5% 353-2706-000	CR2	1	
	91	RC20GF103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/2 W 745-1394-000	R42	1	
	92	BC3255	2	TRANSFORMER 97315 677-9020-000	T2	1	
	- 93	68-1660-40	2	NUT, SELF-LKG, HEX., AL, 4-40 72962 333-0605-000 AP		2	
	- 94	MS51957-13	2	SCREW, MACH., SST, PAN HD, 4-40 X 1/4 343-0133-000 AP		2	
	95	150D475X0035B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000	C10	1	
	96	150D104X0035A2	2	CAPACITOR, FXD, 0.10 UF 20%, 35 VDCW 56289 184-7408-000	C3	1	
	97	MF1-8 121K1PCTTO	2	RESISTOR, FXD, 0.121 MEG 1%, 1/8 W 91637 705-0673-000	R36	1	
	98	RC20GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1/2 W 745-1370-000	R38	1	
	99	2N956	2	TRANSISTOR 352-0400-010	Q10	1	
	100	RL20S272G	2	RESISTOR, FXD, 2700 OHMS 2%, 1/2 W 745-2625-000	R39	1	
	101	CM05E510J03	2	CAPACITOR, FXD, 51 PF 5%, 500 VDCW 912-2795-000	C19	1	
	102	MF1-8 90-9K1PCTTO	2	RESISTOR, FXD, 90,900 OHMS 1%, 1/8 W 91637 705-0670-000	R40	1	
	103	MF1-8 8-25K1PCTTO	2	RESISTOR, FXD, 8250 OHMS 1%, 1/8 W 91637 705-0645-000	R37	1	
	104	2N956	2	TRANSISTOR 352-0400-010	Q11	1	
	105	1N645	2	SEMICOND DEVICE 353-2607-000	CR1	1	
	106	150D475X0035B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000	C4	1	
	107	MF1-8 1K1PCTTO	2	RESISTOR, FXD, 1000 OHMS 1%, 1/8 W 91637 705-0628-000	R41	1	
	108	MF1-8 19-6K1PCTTO	2	RESISTOR, FXD, 19,600 OHMS 1%, 1/8 W 91637 705-0654-000	R43	1	
	109	2N718A	2	TRANSISTOR 352-0318-000	Q12	1	
	110	RC20GF562K	2	RESISTOR, FXD, 5600 OHMS 10%, 1/2 W 745-1384-000	R129	1	
R	111	1N645	2	SEMICOND DEVICE 353-2607-000 EFF THRU MCN 130	CR13	1	
R	111	1N758A	2	SEMICOND DEVICE, ZENER DIO, 10 V 5% 353-2724-000 EFF MCN 131 SB-6	CR13	1	
R	112	2N718A	2	TRANSISTOR 352-0318-000 EFF THRU MCN 130 DELETED BY SB-6	Q41	1	
R	112	RT4737	2	TRANSISTOR 07933 352-0692-040 EFF MCN 131 SB-6	Q41	1	
R	113	MF1-8 511R0FTO	2	RESISTOR, FXD, 511 OHMS 1%, 1/8 W 91637 724-0078-000	R140	AR	
R	113	MF1-8 619R0FTO	2	RESISTOR, FXD, 619 OHMS 1%, 1/8 W 91637 724-0081-000 EFF MCN 131	R140	AR	

GROUP ASSEMBLY PARTS LIST

	FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
R	1103 113	MF1-8 750R0F TO	2	RESISTOR, FXD, 750 OHMS 1%, 1/8 W 91637 724-0084-000 EFF MCN 131	R140	AR	
R	113	MF1-8 909R0F TO	2	RESISTOR, FXD, 909 OHMS 1%, 1/8 W 91637 724-0087-000 EFF MCN 131	R140	AR	
R	113	MF1-8 11000F TO	2	RESISTOR, FXD, 1100 OHMS 1%, 1/8 W 91637 724-0090-000 EFF MCN 131	R140	AR	
R	114	MF1-8 10R00F TO	2	RESISTOR, FXD, 10 OHMS 1%, 1/8 W 91637 724-0001-000 EFF THRU MCN 130 DELETED BY SB-6	R141	1	
R	115	2N718A	2	TRANSISTOR 352-0318-000 EFF THRU MCN 130	Q40	1	
R	115	RT4737	2	TRANSISTOR 07933 352-0692-040 EFF MCN 131 SB-6	Q40	1	
R	116	1N645	2	SEMICOND DEVICE 353-2607-000 EFF THRU MCN 130	CR12	1	
R	116	1N758A	2	SEMICOND DEVICE, ZENER DIO, 10 V 5% 353-2724-000 EFF MCN 131 SB-6	CR12	1	
	117	RC20GF562K	2	RESISTOR, FXD, 5600 OHMS 10%, 1/2 W 745-1384-000	R128	1	
	118	MF1-8 6-19K1 PCTTO	2	RESISTOR, FXD, 6190 OHMS 1%, 1/8 W 91637 705-0642-000	R142	1	
	119	MF1-8 6-19K1 PCTTO	2	RESISTOR, FXD, 6190 OHMS 1%, 1/8 W 91637 705-0642-000	R143	1	
	120	151D345X0035 X2	2	CAPACITOR, FXD, 3.4 UF 20%, 35 VDCW 56289 184-8269-000	C43	1	
	121	RL20S272G	2	RESISTOR, FXD, 2700 OHMS 2%, 1/2 W 745-2625-000	R124	1	
	122	RC07GF391K	2	RESISTOR, FXD, 390 OHMS 10%, 1/4 W 745-0734-000	R127	1	
	123	2N956	2	TRANSISTOR 352-0400-010	Q38	1	
	124	2N956	2	TRANSISTOR 352-0400-010	Q37	1	
	125	RC20GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1/2 W 745-1370-000	R123	1	
	126	BC3256	2	TRANSFORMER 97315 677-9019-000	T5	1	
	-127	68-1660-40	2	NUT, SELF-LKG, HEX., AL, 4-40 72962 333-0605-000 AP		2	
	-128	MS51957-13	2	SCREW, MACH., SST, PAN HD, 4-40 X 1/4 343-0133-000 AP		2	
	129	MF1-8 8-25K1 PCTTO	2	RESISTOR, FXD, 8250 OHMS 1%, 1/8 W 91637 705-0645-000	R122	1	
	-130	MF1-8 90-9K1 PCTTO	2	RESISTOR, FXD, 90,900 OHMS 1%, 1/8 W 91637 705-0670-000	R125	1	
	131	CM05E510J03	2	CAPACITOR, FXD, 51 PF 5%, 500 VDCW 912-2795-000	C14	1	
	132	RSM2C15500F	2	RESISTOR, FXD, 1550 OHMS 1%, 2.5 W 91637 746-9431-000	R126	1	
	133	2N718A	2	TRANSISTOR 352-0318-000	Q39	1	
	134	150D156X0035 R2	2	CAPACITOR, FXD, 15 UF 20%, 35 VDCW 56289 184-7414-000	C15	1	
	135	MF1-8 34-8K1 PCTTO	2	RESISTOR, FXD, 34,800 OHMS 1%, 1/8 W 91637 705-0660-000	R95	1	
	136	150D475X0035 B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000	C24	1	
	137	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000	R87	1	

GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
1103 138	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000	R88	1	
139	2N718A	2	TRANSISTOR 352-0318-000	Q27	1	
140	2N718A	2	TRANSISTOR 352-0318-000	Q42	1	
141	2N718A	2	TRANSISTOR 352-0318-000	Q43	1	
142	BC3255	2	TRANSFORMER 97315 677-9020-000	T4	1	
-143	68-1660-40	2	NUT, SELF-LKG, HEX., AL, 4-40 72962 333-0605-000 AP		2	
-144	MS51957-13	2	SCREW, MACH., SST, PAN HD, 4-40 X 1/4 343-0133-000 AP		2	
145	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000	R81	1	
146	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000	R80	1	
147	1N645	2	SEMICOND DEVICE 353-2607-000	CR15	1	
148	MF1-8 42-2K1 PCTTO	2	RESISTOR, FXD, 42,200 OHMS 1%, 1/8 W 91637 705-0662-000	R85	1	
149	1N645	2	SEMICOND DEVICE 353-2607-000	CR14	1	
150	151D115X0020 W2	2	CAPACITOR, FXD, 1.1 UF 20%, 20 VDCW 56289 184-8276-000	C30	1	
151	151D115X0020 W2	2	CAPACITOR, FXD, 1.1 UF 20%, 20 VDCW 56289 184-8276-000	C29	1	
152	RC07GF225K	2	RESISTOR, FXD, 2.2 MEG 10%, 1/4 W 745-0869-000	R86	1	
153	150D105X0035 A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000	C23	1	
154	MF1-8 11K1PC TTO	2	RESISTOR, FXD, 11,000 OHMS 1%, 1/8 W 91637 705-0648-000	R79	1	
155	MF1-8 23-7K1 PCTTO	2	RESISTOR, FXD, 23,700 OHMS 1%, 1/8 W 91637 705-0656-000	R89	1	
156	MF1-8 34-8K1 PCTTO	2	RESISTOR, FXD, 34,800 OHMS 1%, 1/8 W 91637 705-0660-000	R90	1	
157	MF1-8 68-1K1 PCTTO	2	RESISTOR, FXD, 68,100 OHMS 1%, 1/8 W 91637 705-0667-000	R91	1	
158	MF1-8 133K1P CTTO	2	RESISTOR, FXD, 0.133 MEG 1%, 1/8 W 91637 705-0674-000	R92	1	
159	MF1-8 287K1P CTTO	2	RESISTOR, FXD, 0.287 MEG 1%, 1/8 W 91637 705-0682-000	R93	1	
R 159A	DH226	2	TRANSFORMER 80223 677-1485-000 EFF MCN 131 SB-6	T7	1	
160	151D116X0035 Y2	2	CAPACITOR, FXD, 11 UF 20%, 35 VDCW 56289 184-8272-000	C16	1	
161	151D345X0035 X2	2	CAPACITOR, FXD, 3.4 UF 20%, 35 VDCW 56289 184-8269-000	C17	1	
162	MF1-8 14-7K1 PCTTO	2	RESISTOR, FXD, 14,700 OHMS 1%, 1/8 W 91637 705-0651-000	R130	1	
163	MF1-8 1K1PCT TO	2	RESISTOR, FXD, 1000 OHMS 1%, 1/8 W 91637 705-0628-000	R63	1	
164	RC20GF562K	2	RESISTOR, FXD, 5600 OHMS 10%, 1/2 W 745-1384-000	R66	1	
R 165	1N645	2	SEMICOND DEVICE 353-2607-000 EFF THRU MCN 130	CR8	1	
R 165	1N754A	2	SEMICOND DEVICE, ZENER DIO, 6.8 V 5% 353-2716-000 EFF MCN 131 SB-6	CR8	1	

GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
1103 166	RC20GF562K	2	RESISTOR, FXD, 5600 OHMS 10%, 1/2 W 745-1384-000 R67	1	
R 167	1N645	2	SEMICOND DEVICE 353-2607-000 EFF THRU MCN 130 CR9	1	
R 167	1N754A	2	SEMICOND DEVICE, ZENER DIO, 6.8 V 5% 353-2716-000 EFF MCN 131 SB-6 CR9	1	
168	RC20GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1/2 W 745-1370-000 R75	1	
169	2N956	2	TRANSISTOR 352-0400-010 Q25	1	
170	MF1-8 8-25K1 PCTTO	2	RESISTOR, FXD, 8250 OHMS 1%, 1/8 W 91637 705-0645-000 R74	1	
171	CM05E510J03	2	CAPACITOR, FXD, 51 PF 5%, 500 VDCW 912-2795-000 C21	1	
172	2N956	2	TRANSISTOR 352-0400-010 Q26	1	
173	MF1-8 90-9K1 PCTTO	2	RESISTOR, FXD, 90,900 OHMS 1%, 1/8 W 91637 705-0670-000 R77	1	
174	RL20S272G	2	RESISTOR, FXD, 2700 OHMS 2%, 1/2 W 745-2625-000 R76	1	
175	150D475X0035 B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000 C20	1	
176	150D475X0035 B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000 C22	1	
177	MF1-8 61-9K1 PCTTO	2	RESISTOR, FXD, 61,900 OHMS 1%, 1/8 W 91637 705-0666-000 R78	1	
R 178	MF1-8 23-7K1 PCTTO	2	RESISTOR, FXD, 23,700 OHMS 1%, 1/8 W 91637 705-0656-000 EFF THRU MCN 130 DELETED BY SB-6 R73	1	
R 178	MF1-8 27401F TO	2	RESISTOR, FXD, 27,400 OHMS 1%, 1/8 W 91637 724-0128-000 EFF MCN 131 SB-6 R73	1	
179	MF1-8 133K1P CTTO	2	RESISTOR, FXD, 0.133 MEG 1%, 1/8 W 91637 705-0674-000 R72	1	
180	MF1-8 68-1K1 PCTTO	2	RESISTOR, FXD, 68,100 OHMS 1%, 1/8 W 91637 705-0667-000 R71	1	
181	MF1-8 31-6K1 PCTTO	2	RESISTOR, FXD, 31,600 OHMS 1%, 1/8 W 91637 705-0659-000 R70	1	
182	MF1-8 16-2K1 PCTTO	2	RESISTOR, FXD, 16,200 OHMS 1%, 1/8 W 91637 705-0652-000 R69	1	
183	MF1-8 10K1PC TTO	2	RESISTOR, FXD, 10,000 OHMS 1%, 1/8 W 91637 705-0647-000 R68	1	
184	150D475X0035 B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000 C18	1	
185	MF1-8 14-7K1 PCTTO	2	RESISTOR, FXD, 14,700 OHMS 1%, 1/8 W 91637 705-0651-000 R131	1	
186	BC3255	2	TRANSFORMER 97315 677-9020-000 T3	1	
-187	68-1660-40	2	NUT, SELF-LKG, HEX., AL, 4-40 72962 333-0605-000 AP	2	
-188	MS51957-13	2	SCREW, MACH., SST, PAN HD, 4-40 X 1/4 343-0133-000 AP	2	
189	DH226	2	TRANSFORMER 80223 677-1485-000 T6	1	
R 190	TS2804	2	SEMICOND DEVICE 07933 352-0570-000 EFF THRU MCN 130 Q21	1	
R 190	RT4737	2	TRANSISTOR 07933 352-0692-040 EFF MCN 131 SB-6 Q21	1	

GROUP ASSEMBLY PARTS LIST

	FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
R	1103 191	RC20GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1/2 W 745-1370-000 EFF THRU MCN 130	R64	1	
R	191	RC20GF562K	2	RESISTOR, FXD, 5600 OHMS 10%, 1/2 W 745-1384-000 EFF MCN 131 SB-6	R64	1	
R	192	1N645	2	SEMICOND DEVICE 353-2607-000 EFF THRU MCN 130	CR6	1	
R	192	1N965B	2	SEMICOND DEVICE, ZENER DIO, 15 V 5% 353-3176-000 EFF MCN 131 SB-6	CR6	1	
R	193	RC20GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1/2 W 745-1370-000 EFF THRU MCN 130	R65	1	
R	193	RC20GF562K	2	RESISTOR, FXD, 5600 OHMS 10%, 1/2 W 745-1384-000 EFF MCN 131 SB-6	R65	1	
R	194	1N645	2	SEMICOND DEVICE 353-2607-000 EFF THRU MCN 130	CR7	1	
R	194	1N965B	2	SEMICOND DEVICE, ZENER DIO, 15 V 5% 353-3176-000 EFF MCN 131 SB-6	CR7	1	
R	195	TS2804	2	SEMICOND DEVICE 07933 352-0570-000 EFF THRU MCN 130	Q22	1	
R	195	RT4737	2	TRANSISTOR 07933 352-0692-040 EFF MCN 131 SB-6	Q22	1	
R	196	TS2804	2	SEMICOND DEVICE 07933 352-0570-000 EFF THRU MCN 130	Q23	1	
R	196	RT4737	2	TRANSISTOR 07933 352-0692-040 EFF MCN 131 SB-6	Q23	1	
R	197	2N718A	2	TRANSISTOR 352-0318-000 EFF THRU MCN 130	Q24	1	
R	197	RT4737	2	TRANSISTOR 07933 352-0692-040 EFF MCN 131 SB-6	Q24	1	
	198	1N645	2	SEMICOND DEVICE 353-2607-000	CR10	1	
	199	MF1-8 100K1PCTTO	2	RESISTOR, FXD, 0.1 MEG 1%, 1/8 W 91637 705-0671-000	R112	1	
	200	MF1-8 100K1PCTTO	2	RESISTOR, FXD, 0.1 MEG 1%, 1/8 W 91637 705-0671-000	R113	1	
	201	150D105X0035A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000	C28	1	
	202	2N956	2	TRANSISTOR 352-0400-010	Q34	1	
	203	2N956	2	TRANSISTOR 352-0400-010	Q35	1	
	204	MF1-8 8-25K1PCTTO	2	RESISTOR, FXD, 8250 OHMS 1%, 1/8 W 91637 705-0645-000	R82	1	
	205	CM05E510J03	2	CAPACITOR, FXD, 51 PF 5%, 500 VDCW 912-2795-000	C42	1	
	206	MF1-8 42-2K1PCTTO	2	RESISTOR, FXD, 42,200 OHMS 1%, 1/8 W 91637 705-0662-000	R83	1	
	207	150D475X0035B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000	C27	1	
	208	MF1-8 42-2K1PCTTO	2	RESISTOR, FXD, 42,200 OHMS 1%, 1/8 W 91637 705-0662-000	R84	1	
R	208A	1N754A	2	SEMICOND DEVICE, ZENER DIO, 6.8 V 5% 353-2716-000 EFF MCN 131 SB-6	CR28	1	
R	208B	1N754A	2	SEMICOND DEVICE, ZENER DIO, 6.8 V 5% 353-2716-000 EFF MCN 131 SB-6	CR27	1	

GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
1103 209	MF1-8 6-19K1 PCTTO	2	RESISTOR, FXD, 6190 OHMS 1%, 1/8 W 91637 705-0642-000	R132	1	
210	MF1-8 42-2K1 PCTTO	2	RESISTOR, FXD, 42,200 OHMS 1%, 1/8 W 91637 705-0662-000	R115	1	
211	150D105X0035 A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000	C25	1	
212	2N2608	2	TRANSISTOR 352-0605-010	Q46	1	
213	RC07GF474K	2	RESISTOR, FXD, 0.47 MEG 10%, 1/4 W 745-0845-000	R119	1	
214	CK06CW103M	2	CAPACITOR, FXD, 10,000 PF 20%, 200 VDCW 913-4001-000	C35	1	
215	RC07GF474K	2	RESISTOR, FXD, 0.47 MEG 10%, 1/4 W 745-0845-000	R121	1	
216	MF1-8 6-19K1 PCTTO	2	RESISTOR, FXD, 6190 OHMS 1%, 1/8 W 91637 705-0642-000	R133	1	
R 217	MF1-8 38-3K1 PCTTO	2	RESISTOR, FXD, 38,300 OHMS 1%, 1/8 W 91637 705-0661-000 EFF THRU MCN 130	R120	1	
R 217	MF1-8 34-8K1 PCTTO	2	RESISTOR, FXD, 34,800 OHMS 1%, 1/8 W 91637 705-0660-000 EFF MCN 131 SB-6	R120	1	
218	150D105X0035 A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000	C26	1	
219	RC07GF225K	2	RESISTOR, FXD, 2.2 MEG 10%, 1/4 W 745-0869-000	R118	1	
220	2N718A	2	TRANSISTOR 352-0318-000	Q47	1	
221	151D206X9010 X2	2	CAPACITOR, FXD, 20 UF 10%, 10 VDCW 56289 184-8370-000	C33	1	
222	2N718A	2	TRANSISTOR 352-0318-000	Q45	1	
223	150D105X0035 A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000	C32	1	
224	150D105X0035 A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000	C34	1	
225	2N718A	2	TRANSISTOR 352-0318-000	Q44	1	
226	1N645	2	SEMICOND DEVICE 353-2607-000	CR21	1	
227	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000	R117	1	
228	1N645	2	SEMICOND DEVICE 353-2607-000	CR20	1	
229	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000	R116	1	
230	2N718A	2	TRANSISTOR 352-0318-000	Q28	1	
231	150D476X0035 S2	2	CAPACITOR, FXD, 47 UF 20%, 35 VDCW 56289 184-7411-000	C36	1	
R 232	MF1-8 100K1P CTTO	2	RESISTOR, FXD, 0.1 MEG 1%, 1/8 W 91637 705-0671-000 EFF THRU MCN 130	R97	1	
R 232	RC07GF154K	2	RESISTOR, FXD, 0.15 MEG 10%, 1/4 W 745-0827-000 EFF MCN 131 SB-6	R97	1	
233	RL20S272G	2	RESISTOR, FXD, 2700 OHMS 2%, 1/2 W 745-2625-000	R96	1	
234	RC20GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1/2 W 745-1370-000	R94	1	
235	1N751A	2	SEMICOND DEVICE, ZENER DIO, 5.1 V 5% 353-2710-000	CR5	1	
R 236	RC07GF104K	2	RESISTOR, FXD, 0.1 MEG 10%, 1/4 W 745-0821-000 EFF THRU MCN 130	R114	1	

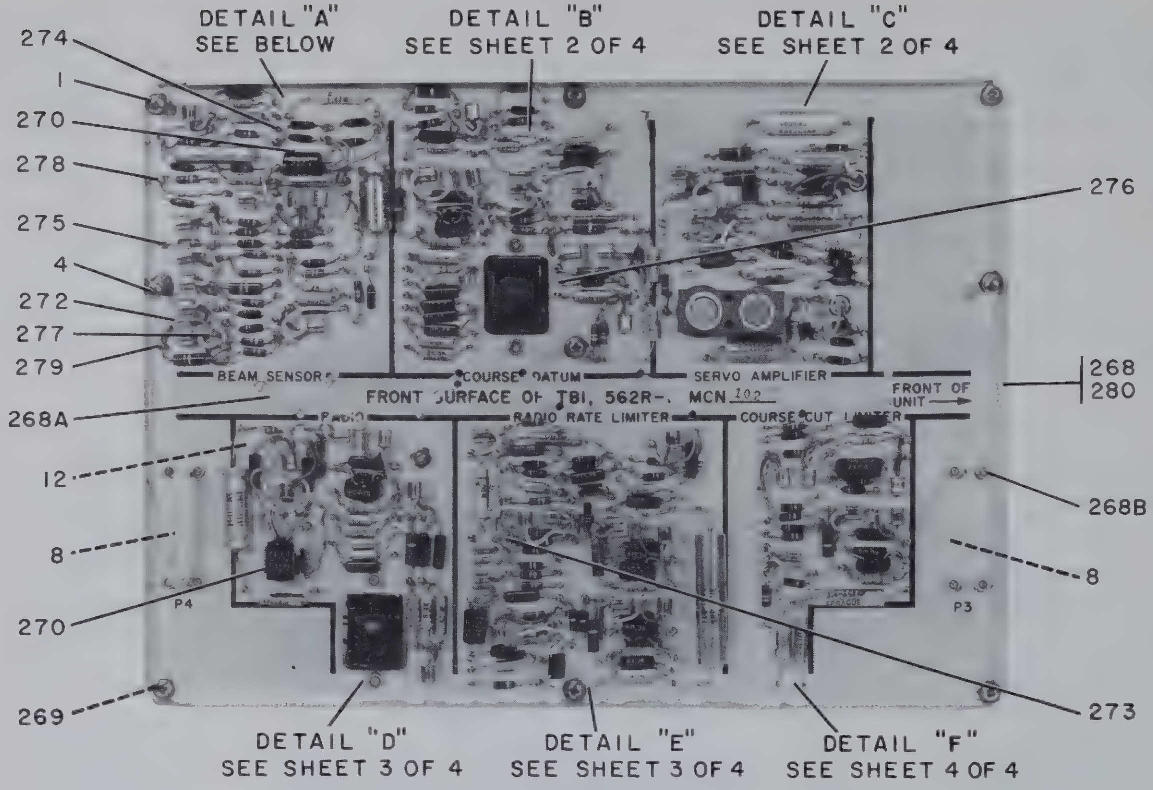
GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
R 1103 236	MF1-8 100K1P CTTO	2	RESISTOR, FXD, 0.1 MEG 1%, 1/8 W 91637 705-0671-000 EFF MCN 131 SB-6 R114	1	
237	1N645	2	SEMICOND DEVICE 353-2607-000 CR18	1	
238	1N645	2	SEMICOND DEVICE 353-2607-000 CR19	1	
239	1N645	2	SEMICOND DEVICE 353-2607-000 CR17	1	
240	1N645	2	SEMICOND DEVICE 353-2607-000 CR16	1	
R 241	RC20GF565K	2	RESISTOR, FXD, 5.6 MEG 10%, 1/2 W 745-1510-000 EFF THRU MCN 130 R111	1	
R 241	MF1-8 10003F TO	2	RESISTOR, FXD, 1 MEG 1%, 1/8 W 91637 724-0175-000 EFF MCN 131 SB-6 R111	1	
242	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R110	1	
243	2N718A	2	TRANSISTOR 352-0318-000 Q33	1	
244	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R109	1	
245	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R106	1	
246	2N718A	2	TRANSISTOR 352-0318-000 Q32	1	
247	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R144	1	
248	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R107	1	
249	151D115X0020 W2	2	CAPACITOR, FXD, 1.1 UF 20%, 20 VDCW 56289 184-8276-000 C31	1	
R 250	RC20GF275K	2	RESISTOR, FXD, 2.7 MEG 10%, 1/2 W 745-1496-000 EFF THRU MCN 130 R108	1	
R 250	MF1-8 56202F TO	2	RESISTOR, FXD, 0.562 MEG 1%, 1/8 W 91637 724-0163-000 EFF MCN 131 SB-6 R108	1	
R 251	RC07GF155K	2	RESISTOR, FXD, 1.5 MEG 10%, 1/4 W 745-0863-000 EFF THRU MCN 130 R105	1	
R 251	MF1-8 48702F TO	2	RESISTOR, FXD, 0.487 MEG 1%, 1/8 W 91637 724-0160-000 EFF MCN 131 SB-6 R105	1	
252	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R104	1	
253	1N645	2	SEMICOND DEVICE 353-2607-000 CR29	1	
254	2N718A	2	TRANSISTOR 352-0318-000 Q31	1	
255	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R103	1	
256	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R100	1	
257	1N965B	2	SEMICOND DEVICE, ZENER DIO, 15 V 5% 353-3176-000 CR22	1	
258	2N718A	2	TRANSISTOR 352-0318-000 Q30	1	
259	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R101	1	
260	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R98	1	
261	2N718A	2	TRANSISTOR 352-0318-000 Q29	1	
262	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R99	1	

GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
R 1103 263	RN60D6813F	2	RESISTOR, FXD, 0.681 MEG 1%, 1/4 W R102 705-6732-000 EFF THRU MCN 130 DELETED BY SB-6	1	
R 263	MF1-8 40202FTO	2	RESISTOR, FXD, 0.402 MEG 1%, 1/8 W R102 91637 724-0156-000 EFF MCN 131 SB-6	1	
264	1N645	2	SEMICOND DEVICE 353-2607-000 CR11	1	
265	761-7493-001	2	TERMINAL BOARD P	1	
R 265A	F22NCFMA1-26	3	NUT, SELF-LKG, CLINCH, CAD. PL STL, 2-56 72962 333-0837-000 EFF MCN 301	8	
266	SL354-351DRED	3	TERMINAL 12615 306-2474-040	8	
267	SL354-351DORN	3	TERMINAL 12615 306-2474-050	9	
268	SL354-351DYEL	3	TERMINAL 12615 306-2474-060	4	
R 269	SL354-351DVIC	3	TERMINAL 12615 306-2474-090	5	
270	SL354-351DWHT	3	TERMINAL 12615 306-2474-010	150	
271	SL354-351DBLK	3	TERMINAL 12615 306-2474-020	29	
R 272	SL347-322DWHT	3	TERMINAL 12615 306-1532-000	99	
273	6009-8A	3	CLIP 91506 139-2336-000	3	
R 273A	MS17821-4-9	3	CLAMP 435-1169-100	8	
-274	R4008X3-32CHROMATEDP	3	RIVET, TUBULAR, AL, 0.089 DIA X 3/32 LG SHK 12014 305-0169-000 AP	3	
275	761-3398-001	3	SPACER P	9	
R 276	761-2956-002	3	CLIP, SPG TENS P EFF THRU MCN 130 DELETED BY SB-6	3	
R 276	6009-8A	3	CLIP 91506 139-2336-000 EFF MCN 131	3	
277	761-2956-001	3	CLIP, SPG TENS P	44	
278	761-3410-002	3	TERMINAL BOARD P	1	

GROUP ASSEMBLY PARTS LIST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BEAM SENSOR
COURSE DATUM
SERVO AMPLIFIER
FRONT SURFACE OF TBI, 562R-. MCN 102
FRONT OF UNIT
RADIO
RADIO RATE LIMITER
COURSE CUT LIMITER
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P3
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DETAIL "E"
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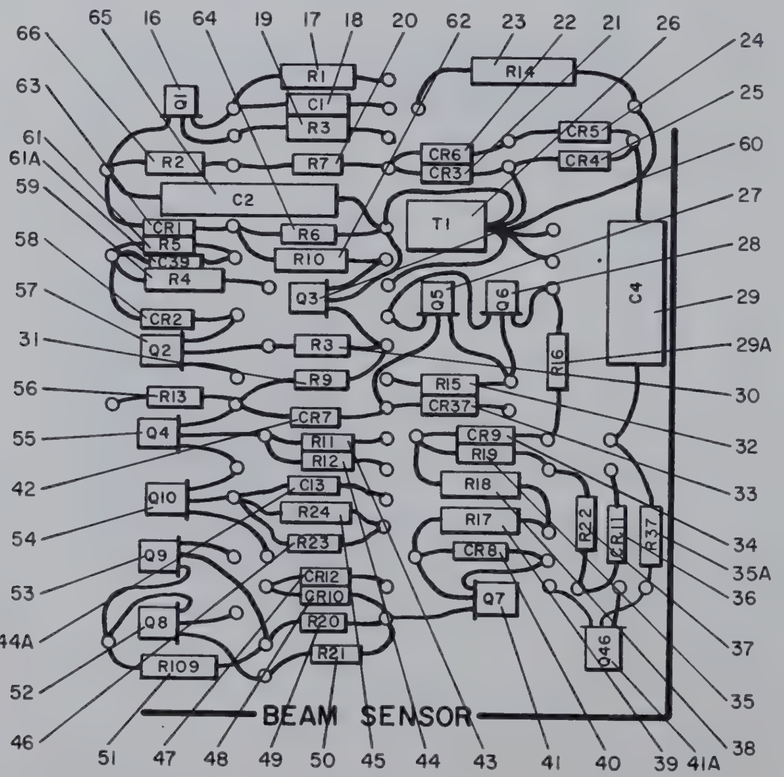
DETAIL "F"
SEE SHEET 4 OF 4

DETAIL A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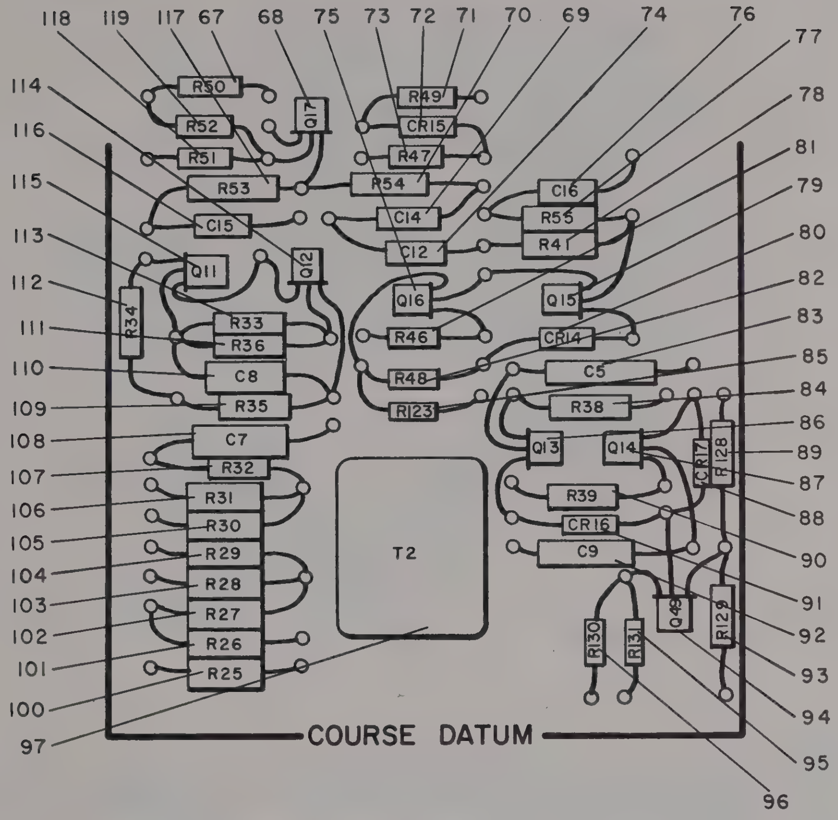
BEAM SENSOR

Roll Steering Computer Subassembly No. 1 (Sheet 1 of 4)
Figure 1104

GROUP ASSEMBLY PARTS LIST

DETAIL B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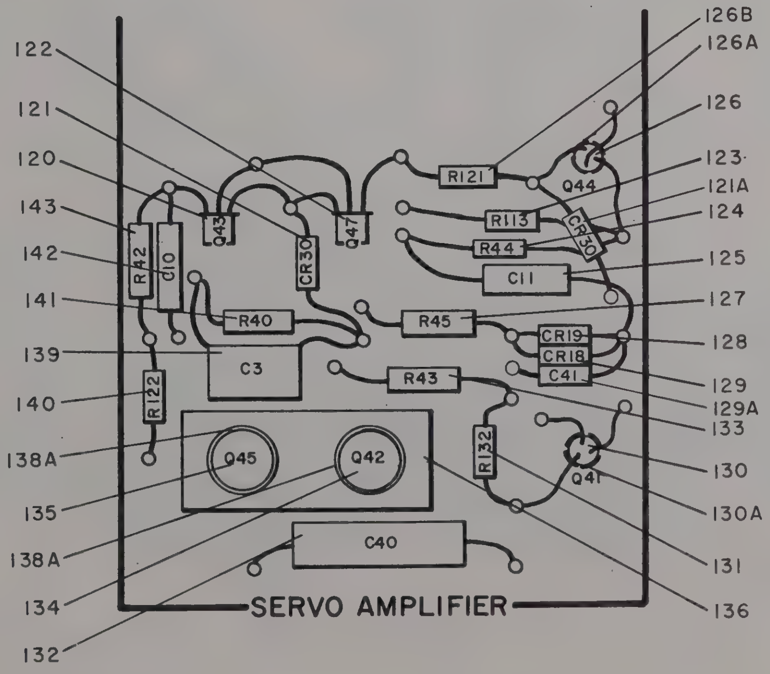
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C3
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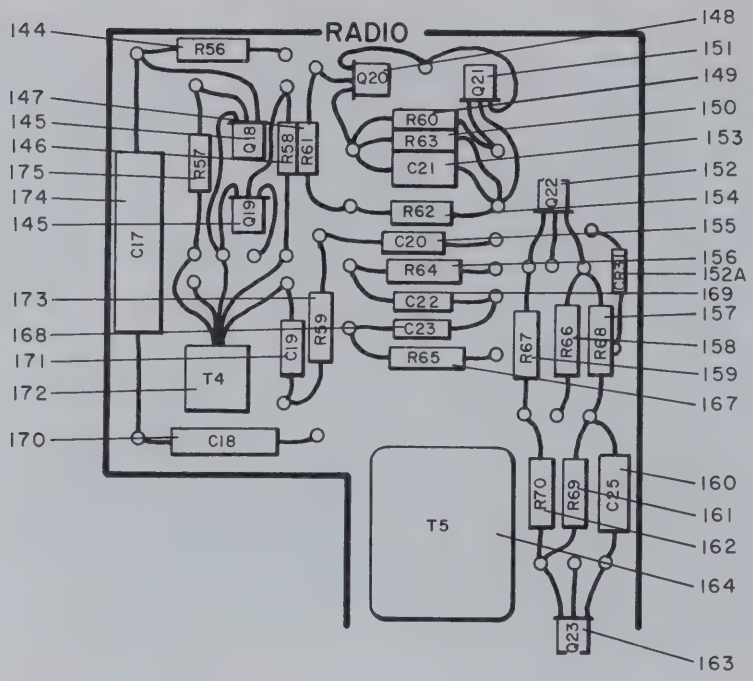
SERVO AMPLIFIER

Roll Steering Computer Subassembly No. 1 (Sheet 2 of 4)
Figure 1104

GROUP ASSEMBLY PARTS LIST

DETAIL D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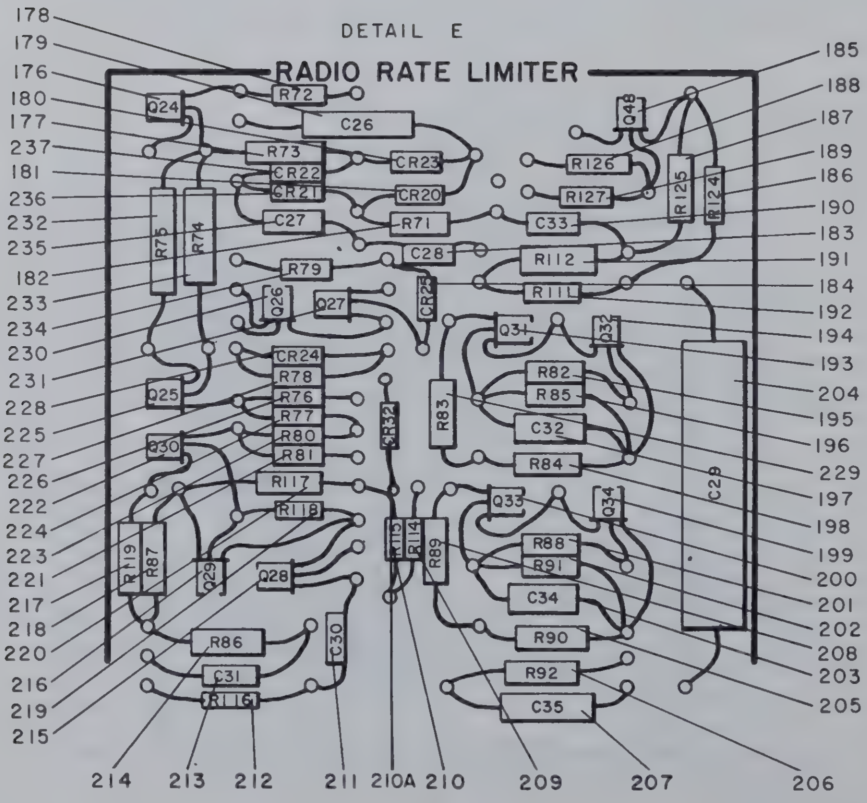
DETAIL E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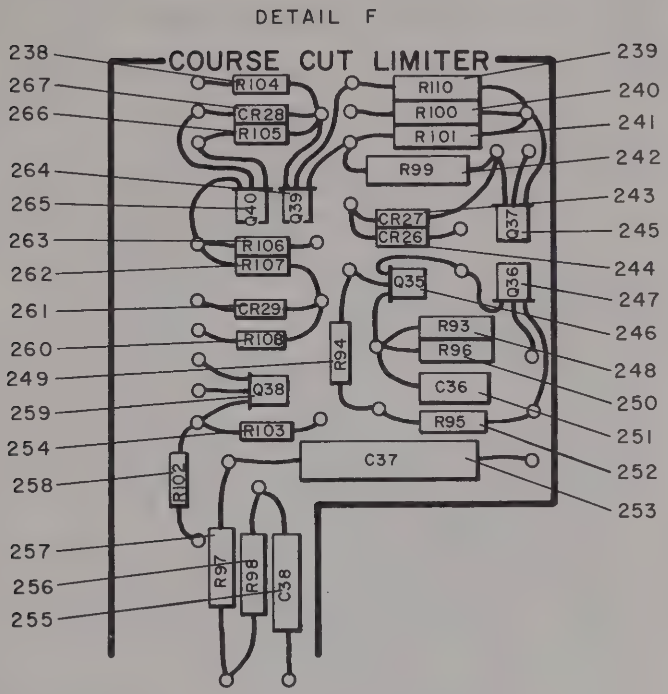
C35

Roll Steering Computer Subassembly No. 1 (Sheet 3 of 4)
Figure 1104


DETAIL F
COURSE CUT LIMITER
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R104
CR28
R105
Q40
Q39
R106
R107
CR29
R108
Q38
R103
R102
R97
R98
C38
R110
R100
R101
R99
CR27
CR26
Q37
Q36
Q35
R94
R93
R96
C36
R95
C37

Roll Steering Computer Subassembly No. 1 (Sheet 4 of 4)
Figure 1104

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
1104 - 0	761-7488-001	1	STEERING COMPUTER SUBASSEMBLY, NO. 1 TB1 SEE FIG. 1101-37 FOR NHA	REF	
1	MS51957-19	2	SCREW, MACH., SST, PAN HD, 4-40 X 3/4 343-0139-000	6	
- 2	340-0644-000	2	SLEEVE, SPG 91314 AP	6	
- 3	4704-04-01-4102	2	WASHER, LOCK, SST, 0.124 ID, 0.275 OD 78189 373-0154-000 AP	6	
4	P343-0016-000	2	SCREW, MACH., SST, PAN HD, 4-40 X 1 1/8 77250 343-0016-000	3	
- 5	340-0644-000	2	SLEEVE, SPG 91314 AP	3	
- 6	4704-04-01-4102	2	WASHER, LOCK, SST, 0.124 ID, 0.275 OD 78189 373-0154-000 AP	3	
- 7	541-5969-002	2	SPACER, SLV AP	3	
8	XSRM34PNSS1000	2	CONNECTOR 81312 372-5855-010 P3,P4	2	
R - 9	68NM26	2	NUT, SELF-LKG, HEX., AL, 2-56 72962 333-0327-000 EFF THRU MCN 298 AP	8	

GROUP ASSEMBLY PARTS LIST

	FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
	1104 - 10	541-5954-002	2	SPACER, SLV AP		8	
R	- 10A	502-1516-002	2	SPACER AP		2	
	- 11	P347-0001-000	2	SCREW, MACH., SST, FIL H, 2-56 X 5/8 77250 347-0001-000 AP		8	
	12	4007-4HOTTINNED	2	TERMINAL 77147 304-0015-000		1	
	- 13	P313-0051-000	2	NUT, PLAIN, HEX., NI PL BRS, 4-40 77250 313-0051-000 AP		1	
	- 14	310-0076-000	2	WASHER, LOCK, BRZ, 0.115 ID, 0.212 OD COML AP		1	
	- 15	P343-0285-000	2	SCREW, MACH., NI PL BRS, PAN HD, 4-40 X 1/4 77250 343-0285-000 AP		1	
	16	2N718A	2	TRANSISTOR 352-0318-000 DELETED BY SB-9	Q1	1	
	16	2N930	2	TRANSISTOR 352-0517-010 SB-9	Q1	1	
	17	MF1-8 8-11K1 PCTTO	2	RESISTOR, FXD, 5110 OHMS 1%, 1/8 W 91637 705-0640-000	R1	1	
	18	150D105X0035A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000	C1	1	
	19	MF1-8 511R0FTO	2	RESISTOR, FXD, 511 OHMS 1%, 1/8 W 91637 724-0078-000 SB-9	R3	1	
	19	MF1-8 562K1PCTT7	2	RESISTOR, FXD, 562 OHMS 1%, 1/8 W 91637 705-0625-000 SB-9	R3	1	
	20	RC07GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/4 W 745-0800-000	R7	1	
	21	1N645	2	SEMICOND DEVICE 353-2607-000	CR3	1	
	22	1N645	2	SEMICOND DEVICE 353-2607-000	CR6	1	
	23	MF1-4 1470K1 PCTTO	2	RESISTOR, FXD, 1.47 MEG 1%, 1/4 W 91637 724-0546-000	R14	1	
	24	1N645	2	SEMICOND DEVICE 353-2607-000	CR5	1	
	25	1N645	2	SEMICOND DEVICE 353-2607-000	CR4	1	
	26	DH226	2	TRANSFORMER 80223 677-1485-000	T1	1	
	27	2N956	2	TRANSISTOR 352-0400-010	Q5	1	
	28	2N956	2	TRANSISTOR 352-0400-010	Q6	1	
	29	130D826X0030T2	2	CAPACITOR, FXD, 82 UF 20%, 30 VDCW 56289 184-7874-000	C4	1	
	29A	MF1-8 23-7K1 PCTTO	2	RESISTOR, FXD, 23,700 OHMS 1%, 1/8 W 91637 705-0656-000	R16	1	
	30	RC07GF823K	2	RESISTOR, FXD, 82,000 OHMS 10%, 1/4 W 745-0818-000	R8	1	
R	31	RC07GF104K	2	RESISTOR, FXD, 0.1 MEG 10%, 1/4 W 745-0821-000 EFF THRU MCN 443	R9	1	
R	31	RC07GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/4 W 745-0800-000 EFF MCN 444 SB-11	R9	1	
	32	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000	R15	1	
R	33	1N645	2	SEMICOND DEVICE 353-2607-000 EFF THRU MCN 443 SB-11	CR37	1	
	34	1N645	2	SEMICOND DEVICE 353-2607-000	CR9	1	
	35	RC07GF473K	2	RESISTOR, FXD, 47,000 OHMS 10%, 1/4 W 745-0809-000	R19	1	
	35A 35	MF1-8 8-11K1 PCTTO	2	RESISTOR, FXD, 5110 OHMS 1%, 1/8 W 91637 705-0640-000 SB-9	R37	1	
	36	1N645	2	SEMICOND DEVICE 353-2607-000	CR11	1	

GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
1104 37	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R22	1	
38	MF1-8 237K1P CTTO	2	RESISTOR, FXD, 0.237 MEG 1%, 1/8 W 91637 705-0680-000 R18	1	
39	MF1-8 237K1P CTTO	2	RESISTOR, FXD, 0.237 MEG 1%, 1/8 W 91637 705-0680-000 R17	1	
40	1N645	2	SEMICOND DEVICE 353-2607-000 CR8	1	
41	2N718A	2	TRANSISTOR 352-0318-000 Q7	1	
41A	2N930	2	TRANSISTOR 352-0517-010 SB-9 Q46	1	
42	1N645	2	SEMICOND DEVICE 353-2607-000 CR7	1	
43	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R11	1	
44	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R12	1	
44A	150D105X0035 A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000 SB-1 C13	1	
45	RC20GF103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/2 W 745-1394-000 R24	1	
46	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R23	1	
47	1N645	2	SEMICOND DEVICE 353-2607-000 CR12	1	
48	1N645	2	SEMICOND DEVICE 353-2607-000 CR10	1	
49	RC07GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/4 W 745-0800-000 R20	1	
50	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R21	1	
51	RC20GF123K	2	RESISTOR, FXD, 12,000 OHMS 10%, 1/2 W 745-1398-000 R109	1	
52	2N718A	2	TRANSISTOR 352-0318-000 Q8	1	
53	2N718A	2	TRANSISTOR 352-0318-000 Q9	1	
54	2N718A	2	TRANSISTOR 352-0318-000 Q10	1	
55	2N718A	2	TRANSISTOR 352-0318-000 Q4	1	
R 56	RC07GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/4 W 745-0800-000 EFF THRU MCN 443 R13	1	
R 56	RC07GF682K	2	RESISTOR, FXD, 6800 OHMS 10%, 1/4 W 745-0779-000 EFF MCN 444 SB-11 R13	1	
57	2N718A	2	TRANSISTOR 352-0318-000 DELETED BY SB-9 Q2	1	
57	2N956	2	TRANSISTOR 352-0400-010 SB-9 Q2	1	
58	1N645	2	SEMICOND DEVICE 353-2607-000 CR2	1	
59	MF1-8 10K1PC TTO	2	RESISTOR, FXD, 10,000 OHMS 1%, 1/8 W 91637 705-0647-000 R4	1	
60	2N718A	2	TRANSISTOR 352-0318-000 Q3	1	
61	RC07GF183K	2	RESISTOR, FXD, 18,000 OHMS 10%, 1/4 W 745-0794-000 R5	1	
R 61A	CK06CW103M	2	CAPACITOR, FXD, 10,000 PF 20%, 200 VDCW 913-4001-000 EFF MCN 256 SB-8 C39	1	
62	MF1-8 21-5K1 PCTTO	2	RESISTOR, FXD, 21,500 OHMS 1%, 1/8 W 91637 705-0655-000 R10	1	
63	1N645	2	SEMICOND DEVICE 353-2607-000 CR1	1	
64	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R6	1	

GROUP ASSEMBLY PARTS LIST

	FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
	1104 65	151D345X0035X2	2	CAPACITOR, FXD, 3.4 UF 20%, 35 VDCW 56289 184-8269-000 C2	1	
	66	RC07GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/4 W 745-0800-000 EFF THRU MCN 131 R2	1	
	66	MF1-8 28-7K1PCTTO	2	RESISTOR, FXD, 28,700 OHMS 1%, 1/8 W 91637 705-0658-000 EFF MCN 132 R2	1	
	67	RC20GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/2 W 745-1380-000 R50	1	
	68	2N718A	2	TRANSISTOR 352-0318-000 Q17	1	
	69	150D105X0035A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000 C14	1	
	70	MF4-8 21-5K1PCTTO	2	RESISTOR, FXD, 21,500 OHMS 1%, 1/8 W 91637 705-0655-000 R54	1	
	71	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R49	1	
	72	1N645	2	SEMICOND DEVICE 353-2607-000 CR15	1	
	73	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R47	1	
	74	150D105X0035A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000 C12	1	
	75	2N718A	2	TRANSISTOR 352-0318-000 Q16	1	
	76	150D105X0035A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000 C16	1	
	77	MF1-8 133K1PCTTO	2	RESISTOR, FXD, 0.133 MEG 1%, 1/8 W 91637 705-0674-000 EFF THRU MCN 443 R55	1	
R	77	MF1-8 75K1PCTTO	2	RESISTOR, FXD, 75,000 OHMS 1%, 1/8 W 91637 705-0668-000 EFF MCN 444 SB-14 R55	1	
	78	MF1-8 42-2K1PCTTO	2	RESISTOR, FXD, 42,200 OHMS 1%, 1/8 W 91637 705-0662-000 R41	1	
	79	2N718A	2	TRANSISTOR 352-0318-000 Q15	1	
	80	1N645	2	SEMICOND DEVICE 353-2607-000 CR14	1	
	81	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R46	1	
	82	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R48	1	
	83	151D115X0020W2	2	CAPACITOR, FXD, 1.1 UF 20%, 20 VDCW 56289 184-8276-000 C5	1	
	84	RC20GF562K	2	RESISTOR, FXD, 5600 OHMS 10%, 1/2 W 745-1384-000 R38	1	
	85	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R123	1	
	86	2N718A	2	TRANSISTOR 352-0318-000 Q13	1	
	87	2N718A	2	TRANSISTOR 352-0318-000 Q14	1	
	88	1N645	2	SEMICOND DEVICE 353-2607-000 CR17	1	
R	89	MF1-8 82-5K1PCTTO	2	RESISTOR, FXD, 82,500 OHMS 1%, 1/8 W 91637 705-0669-000 DELETED BY SB-14 R128	1	
R	89	MF1-8 100K1PCTTO	2	RESISTOR, FXD, 0.1 MEG 1%, 1/8 W 91637 705-0671-000 SB-14 R128	1	
	90	RC20GF562K	2	RESISTOR, FXD, 5600 OHMS 10%, 1/2 W 745-1384-000 R39	1	
	91	1N645	2	SEMICOND DEVICE 353-2607-000 CR16	1	

GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
1104 92	151D115X0020W2	2	CAPACITOR, FXD, 1.1 UF 20%, 20 VDCW 56289 184-8276-000 C9	1	
93	MF1-8 82-5K1PCTTO	2	RESISTOR, FXD, 82,500 OHMS 1%, 1/8 W 91637 705-0669-000 EFF THRU MCN 443 R129	1	
R 93	MF1-8 147K1PCTTO	2	RESISTOR, FXD, 0.147 MEG 1%, 1/8 W 91637 705-0675-000 EFF MCN 444 SB-14 R129	1	
94	2N718A	2	TRANSISTOR 352-0318-000 Q49	1	
95	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R131	1	
96	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R130	1	
97	BC3255	2	TRANSFORMER 97315 677-9020-000 T2	1	
- 98	68-1660-40	2	NUT, SELF-LKG, HEX., AL, 4-40 72962 333-0605-000 AP	2	
- 99	MS51957-13	2	SCREW, MACH., SST, PAN HD, 4-40 X 1/4 343-0133-000 AP	2	
100	MF1-8 36501FTO	2	RESISTOR, FXD, 36,500 OHMS 1%, 1/8 W 91637 724-0131-000 R25	1	
101	MF1-8 19-6K1PCTTO	2	RESISTOR, FXD, 19,600 OHMS 1%, 1/8 W 91637 705-0654-000 R26	1	
102	MF1-8 56-2K1PCTTO	2	RESISTOR, FXD, 56,200 OHMS 1%, 1/8 W 91637 705-0665-000 R27	1	
103	MF1-8 38-3K1PCTTO	2	RESISTOR, FXD, 38,300 OHMS 1%, 1/8 W 91637 705-0661-000 R28	1	
104	MF1-8 75K1PCTTO	2	RESISTOR, FXD, 75,000 OHMS 1%, 1/8 W 91637 705-0668-000 R29	1	
105	MF1-8 147K1PCTTO	2	RESISTOR, FXD, 0.147 MEG 1%, 1/8 W 91637 705-0675-000 R30	1	
106	MF1-8 287K1PCTTO	2	RESISTOR, FXD, 0.287 MEG 1%, 1/8 W 91637 705-0682-000 R31	1	
107	MF1-8 23-7K1PCTTO	2	RESISTOR, FXD, 23,700 OHMS 1%, 1/8 W 91637 705-0656-000 R32	1	
108	150D475X0035B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000 C7	1	
109	RL20S272G	2	RESISTOR, FXD, 2700 OHMS 2%, 1/2 W 745-2625-000 R35	1	
110	CM05E510J03	2	CAPACITOR, FXD, 51 PF 5%, 500 VDCW 912-2795-000 C8	1	
111	MF1-8 90-9K1PCTTO	2	RESISTOR, FXD, 90,900 OHMS 1%, 1/8 W 91637 705-0670-000 R36	1	
112	RC20GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1/2 W 745-1370-000 R34	1	
113	MF1-8 8-25K1PCTTO	2	RESISTOR, FXD, 8250 OHMS 1%, 1/8 W 91637 705-0645-000 R33	1	
114	2N956	2	TRANSISTOR 352-0400-010 Q12	1	
115	2N956	2	TRANSISTOR 352-0400-010 Q11	1	
116	150D105X0035A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000 C15	1	
117	MF1-8 19-6K1PCTTO	2	RESISTOR, FXD, 19,600 OHMS 1%, 1/8 W 91637 705-0654-000 R53	1	
118	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R51	1	
119	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000 R52	1	

GROUP ASSEMBLY PARTS LIST

	FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
	1104 120	2N956	2	TRANSISTOR 352-0400-010 Q43	1	
R	121	1N645	2	SEMICOND DEVICE 353-2607-000 EFF THRU MCN 130 CR30	1	
R	121A	1N645	2	SEMICOND DEVICE 353-2607-000 EFF MCN 131 CR30	1	
	122	2N956	2	TRANSISTOR 352-0400-010 Q47	1	
	123	RC07GF222K	2	RESISTOR, FXD, 2200 OHMS 10%, 1/4 W 745-0761-000 R113	1	
	124	RC07GF221K	2	RESISTOR, FXD, 220 OHMS 10%, 1/4 W 745-0725-000 R44	1	
	125	150D106X0020 B2	2	CAPACITOR, FXD, 10 UF 20%, 20 VDCW 56289 184-7375-000 C11	1	
R	126	MM2186	2	TRANSISTOR 04713 352-0551-020 EFF THRU MCN 928 Q44	1	
R	126	MM2187	2	TRANSISTOR 04713 352-0551-030 EFF MCN 929 SB-16 Q44	1	
R	126A	TXB2P019-028 B	2	HOLDER 98978 352-9984-000	1	
R	126B	RL20S272G	2	RESISTOR, FXD, 2700 OHMS 2%, 1/2 W 745-2625-000 EFF MCN 929 SB-16 R121	1	
R	-126C	MW250-125	2	INSULATOR 08289 302-0640-040 EFF MCN 929 AP	4	
	127	MF1-8 2-15K1 PCTT0	2	RESISTOR, FXD, 2150 OHMS 1%, 1/8 W 91637 705-0632-000 R45	1	
	128	1N645	2	SEMICOND DEVICE 353-2607-000 CR19	1	
	129	1N645	2	SEMICOND DEVICE 353-2607-000 CR18	1	
R	129A	CK06CW103M	2	CAPACITOR, FXD, 10,000 PF 20%, 200 VDCW 913-4001-000 EFF MCN 929 SB-16 C41	1	
	130	2N956	2	TRANSISTOR 352-0400-010 Q41	1	
R	130A	TXB2P019-028 B	2	HOLDER 98978 352-9984-000	1	
	131	RC07GF222K	2	RESISTOR, FXD, 2200 OHMS 10%, 1/4 W 745-0761-000 R132	1	
	132	CL27BL060TN3	2	CAPACITOR, FXD, 6 UF 10%, 75 VDCW 184-8608-000 C40	1	
	133	RC20GF562K	2	RESISTOR, FXD, 5600 OHMS 10%, 1/2 W 745-1384-000 R43	1	
	134	2N1132	2	TRANSISTOR 352-0220-000 DELETED BY SB-10 Q42	1	
	134	2N2905A	2	TRANSISTOR 352-0550-000 SB-10 Q42	1	
R	135	2N1711	2	TRANSISTOR 352-0400-000 EFF THRU MCN 928 Q45	1	
R	135	2N3019	2	TRANSISTOR 352-0734-010 EFF MCN 929 SB-16 Q45	1	
	136	3005A	2	HEAT SINK 13103 352-9542-020	1	
	-137	P330-2250-00 0	2	SCREW, MACH., NYLON, SLOT. FIL H, 4-40 X 3/16 77250 330-2250-000 AP	2	
	-138	302-0348-000	2	INSULATOR, WASH. 91500 AP	2	
	138A	3005BNYLON	3	HEAT SINK 13103 352-9542-030	2	
	139	CM06F11J03	2	CAPACITOR, FXD, 510 PF 5%, 500 VDCW 912-2980-000 C3	1	
	140	RC07GF222K	2	RESISTOR, FXD, 2200 OHMS 10%, 1/4 W 745-0761-000 R122	1	

GROUP ASSEMBLY PARTS LIST

	FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
	1104 141	MF1-8 90-9K1 PCTTO	2	RESISTOR, FXD, 90,900 OHMS 1%, 1/8 W 91637 705-0670-000	R40	1	
	142	150D475X0035 B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000	C10	1	
R	143	MF1-8 8-25K1 PCTTO	2	RESISTOR, FXD, 8250 OHMS 1%, 1/8 W 91637 705-0645-000 EFF THRU MCN 928	R42	1	
R	143	MF1-8 48700F TO	2	RESISTOR, FXD, 4870 OHMS 1%, 1/8 W 91637 724-0110-000 EFF MCN 929 SB-16	R42	1	
	144	MF1-8 422R0F TO	2	RESISTOR, FXD, 422 OHMS 1%, 1/8 W 91637 724-0075-000	R56	1	
	145	TS3856	2	SEMICOND DEVICE 07933 352-0569-010	Q18,Q19	1	
	146	MF1-8 5-62K1 PCTTO	2	RESISTOR, FXD, 5620 OHMS 1%, 1/8 W 91637 705-0641-000	R58	1	
	147	RC20GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1/2 W 745-1370-000	R61	1	
	148	2N956	2	TRANSISTOR 352-0400-010	Q20	1	
	149	MF1-8 8-25K1 PCTTO	2	RESISTOR, FXD, 8250 OHMS 1%, 1/8 W 91637 705-0645-000	R60	1	
	150	MF1-8 90-9K1 PCTTO	2	RESISTOR, FXD, 90,900 OHMS 1%, 1/8 W 91637 705-0670-000	R63	1	
	151	2N956	2	TRANSISTOR 352-0400-010	Q21	1	
	152	2N956	2	TRANSISTOR 352-0400-010	Q22	1	
R	152A	1N754A	2	SEMICOND DEVICE, ZENER DIO, 6.8 V 5% 353-2716-000 EFF MCN 132 SB-6	CR31	1	
	153	CM05E510J03	2	CAPACITOR, FXD, 51 PF 5%, 500 VDCW 912-2795-000	C21	1	
	154	RL20S272G	2	RESISTOR, FXD, 2700 OHMS 2%, 1/2 W 745-2625-000	R62	1	
	155	150D105X0035 A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000	C20	1	
	156	MF1-8 10K1PC TTO	2	RESISTOR, FXD, 10,000 OHMS 1%, 1/8 W 91637 705-0647-000	R64	1	
	157	MF1-8 42-2K1 PCTTO	2	RESISTOR, FXD, 42,200 OHMS 1%, 1/8 W 91637 705-0662-000	R68	1	
	158	MF1-8 8-25K1 PCTTO	2	RESISTOR, FXD, 8250 OHMS 1%, 1/8 W 91637 705-0645-000	R66	1	
	159	RC20GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1/2 W 745-1370-000	R67	1	
	160	150D475X0035 B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000.	C25	1	
	161	MF1-8 46-4K1 PCTTO	2	RESISTOR, FXD, 46,400 OHMS 1%, 1/8 W 91637 705-0663-000	R69	1	
	162	RL20S272G	2	RESISTOR, FXD, 2700 OHMS 2%, 1/2 W 745-2625-000	R70	1	
	163	2N956	2	TRANSISTOR 352-0400-010	Q23	1	
	164	BC3255	2	TRANSFORMER 97315 677-9020-000	T5	1	
	-165	68-1660-40	2	NUT, SELF-LKG, HEX., AL, 4-40 72962 333-0605-000 AP		2	
	-166	MS51957-13	2	SCREW, MACH., SST, PAN HD, 4-40 X 1/4 343-0133-000 AP		2	
	167	MF1-8 42-2K1 PCTTO	2	RESISTOR, FXD, 42,200 OHMS 1%, 1/8 W 91637 705-0662-000	R65	1	

GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
1104 168	150D105X0035 A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000 C23	1	
169	150D105X0035 A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000 C22	1	
170	151D115X0020 W2	2	CAPACITOR, FXD, 1.1 UF 20%, 20 VDCW 56289 184-8276-000 C18	1	
171	CK06CW103M	2	CAPACITOR, FXD, 10,000 PF 20%, 200 VDCW 913-4001-000 C19	1	
172	ER490	2	TRANSFORMER 80223 677-1158-00 T4	1	
173	MF1-8 10K1PC TTO	2	RESISTOR, FXD, 10,000 OHMS 1%, 1/8 W 91637 705-0647-000 R59	1	
174	CL27BE400UN3	2	CAPACITOR, FXD, 40 UF 15%, 15 VDCW 184-7262-000 C17	1	
175	MF1-8 5-62K1 PCTTO	2	RESISTOR, FXD, 5620 OHMS 1%, 1/8 W 91637 705-0641-000 R57	1	
176	2N718A	2	TRANSISTOR 352-0318-000 Q24	1	
177	MF1-8 90-9K1 PCTTO	2	RESISTOR, FXD, 90,900 OHMS 1%, 1/8 W 91637 705-0670-000 R73	1	
178	RC07GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/4 W 745-0800-000 R72	1	
179	151D115X0020 W2	2	CAPACITOR, FXD, 1.1 UF 20%, 20 VDCW 56289 184-8276-000 C26	1	
180	1N645	2	SEMICOND DEVICE 353-2607-000 CR23	1	
181	1N645	2	SEMICOND DEVICE 353-2607-000 CR20	1	
182	MF1-8 90-9K1 PCTTO	2	RESISTOR, FXD, 90,900 OHMS 1%, 1/8 W 91637 705-0670-000 R71	1	
183	CK06CW103M	2	CAPACITOR, FXD, 10,000 PF 20%, 200 VDCW 913-4001-000 C28	1	
184	1N645	2	SEMICOND DEVICE 353-2607-000 CR25	1	
185	2N718A	2	TRANSISTOR 352-0318-000 Q48	1	
186	MF1-8 348K1P CTTO	2	RESISTOR, FXD, 0.348 MEG 1%, 1/8 W 91637 705-0684-000 R12J	1	
187	MF1-8 215K1P CTTO	2	RESISTOR, FXD, 0.215 MEG 1%, 1/8 W 91637 705-0679-000 R125	1	
188	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R126	1	
189	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R127	1	
190	150D104X0035 A2	2	CAPACITOR, FXD, 0.10 UF 20%, 35 VDCW 56289 184-7408-000 C33	1	
191	MF1-8 215K1P CTTO	2	RESISTOR, FXD, 0.215 MEG 1%, 1/8 W 91637 705-0679-000 R112	1	
192	MF1-8 348K1P CTTO	2	RESISTOR, FXD, 0.348 MEG 1%, 1/8 W 91637 705-0684-000 R111	1	
193	2N956	2	TRANSISTOR 352-0400-010 Q31	1	
194	2N956	2	TRANSISTOR 352-0400-010 Q32	1	
195	MF1-8 8-25K1 PCTTO	2	RESISTOR, FXD, 8250 OHMS 1%, 1/8 W 91637 705-0645-000 R82	1	
196	MF1-8 90-9K1 PCTTO	2	RESISTOR, FXD, 90,900 OHMS 1%, 1/8 W 91637 705-0670-000 R85	1	
197	CM05E510J03	2	CAPACITOR, FXD, 51 PF 5%, 500 VDCW 912-2795-000 C32	1	
198	RL20S272G	2	RESISTOR, FXD, 2700 OHMS 2%, 1/2 W 745-2625-000 R84	1	
199	2N956	2	TRANSISTOR 352-0400-010 Q34	1	
200	2N956	2	TRANSISTOR 352-0400-010 Q33	1	

GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
1104 201	MF1-8 8-25K1 PCTTO	2	RESISTOR, FXD, 8250 OHMS 1%, 1/8 W 91637 705-0645-000 R88	1	
202	MF1-8 90-9K1 PCTTO	2	RESISTOR, FXD, 90,900 OHMS 1%, 1/8 W 91637 705-0670-000 R91	1	
203	CM05E510J03	2	CAPACITOR, FXD, 51 PF 5%, 500 VDCW 912-2795-000 C34	1	
204	151D117X0010 Z2	2	CAPACITOR, FXD, 110 UF 20%, 10 VDCW 56289 184-8290-000 C29	1	
205	RL20S272G	2	RESISTOR, FXD, 2700 OHMS 2%, 1/2 W 745-2625-000 R90	1	
206	MF1-8 6-19K1 PCTTO	2	RESISTOR, FXD, 6190 OHMS 1%, 1/8 W 91637 705-0642-000 R92	1	
207	150D475X0035 B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000 C35	1	
208	RC20GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1/2 W 745-1370-000 R89	1	
209	RC07GF565K	2	RESISTOR, FXD, 5.6 MEG 10%, 1/4 W 745-0884-000 R114	1	
210	RC07GF565K	2	RESISTOR, FXD, 5.6 MEG 10%, 1/4 W 745-0884-000 R115	1	
R 210A	1N754A	2	SEMICOND DEVICE, ZENER DIO, 6.8 V 5% 353-2716-000 EFF MCN 132 SB-6 CR32	1	
211	CK06CW103M	2	CAPACITOR, FXD, 10,000 PF 20%, 200 VDCW 913-4001-000 C30	1	
212	RC07GF105K	2	RESISTOR, FXD, 1 MEG 10%, 1/4 W 745-0857-000 R116	1	
213	150D105X0035 A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000 C31	1	
214	MF1-8 14-7K1 PCTTO	2	RESISTOR, FXD, 14,700 OHMS 1%, 1/8 W 91637 705-0651-000 R86	1	
215	2N2608	2	TRANSISTOR 352-0605-010 Q28	1	
216	2N718A	2	TRANSISTOR 352-0318-000 Q29	1	
217	MF1-8 26-1K1 PCTTO	2	RESISTOR, FXD, 26,100 OHMS 1%, 1/8 W 91637 705-0657-000 R119	1	
218	MF1-8 14-7K1 PCTTO	2	RESISTOR, FXD, 14,700 OHMS 1%, 1/8 W 91637 705-0651-000 R87	1	
219	RC07GF222K	2	RESISTOR, FXD, 2200 OHMS 10%, 1/4 W 745-0761-000 R118	1	
220	MF1-8 6-19K1 PCTTO	2	RESISTOR, FXD, 6190 OHMS 1%, 1/8 W 91637 705-0642-000 R117	1	
221	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R81	1	
222	2N718A	2	TRANSISTOR 352-0318-000 Q30	1	
223	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R80	1	
224	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R77	1	
225	2N718A	2	TRANSISTOR 352-0318-000 Q25	1	
226	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R76	1	
227	RC07GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/4 W 745-0800-000 R78	1	
228	1N645	2	SEMICOND DEVICE 353-2607-000 CR24	1	
229	RC20GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1/2 W 745-1370-000 R83	1	

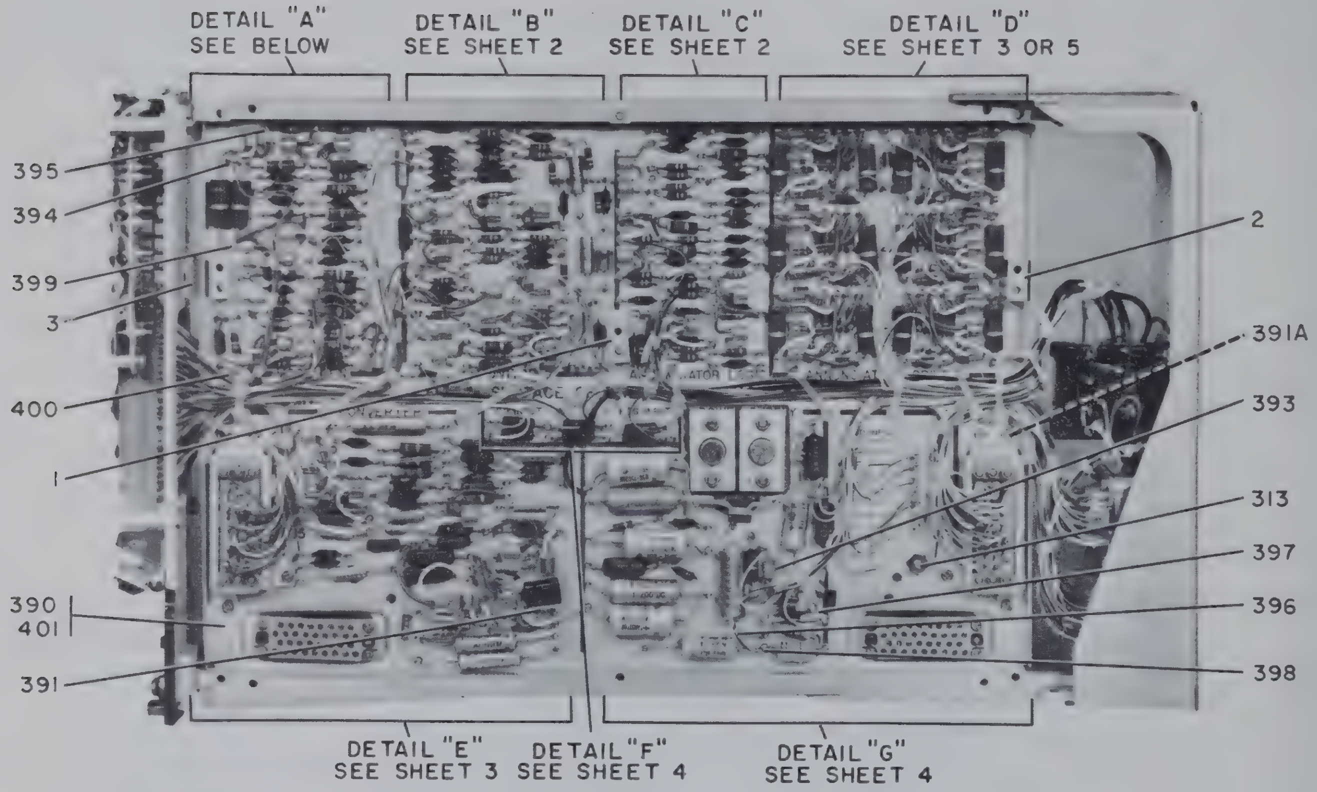
GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
1104 230	2N718A	2	TRANSISTOR 352-0318-000 Q26	1	
231	2N718A	2	TRANSISTOR 352-0318-000 Q27	1	
232	MF1-4 1960K1PCTTO	2	RESISTOR, FXD, 1.96 MEG 1%, 1/4 W 91637 724-0551-000 R75	1	
233	MF1-4 383K1PCTTO	2	RESISTOR, FXD, 0.383 MEG 1%, 1/4 W 91637 724-0521-000 R74	1	
234	RC07GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/4 W 745-0800-000 R79	1	
235	150D105X0035A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000 C27	1	
236	1N645	2	SEMICOND DEVICE 353-2607-000 CR21	1	
237	1N645	2	SEMICOND DEVICE 353-2607-000 CR22	1	
238	RC07GF274K	2	RESISTOR, FXD, 0.27 MEG 10%, 1/4 W 745-0836-000 R104	1	
239	MF1-8 3-16K1PCTTO	2	RESISTOR, FXD, 3160 OHMS 1%, 1/8 W 91637 705-0635-000 R110	1	
240	MF1-8 10K1PCTTO	2	RESISTOR, FXD, 10,000 OHMS 1%, 1/8 W 91637 705-0647-000 R100	1	
241	MF1-8 9-09K1PCTTO	2	RESISTOR, FXD, 9090 OHMS 1%, 1/8 W 91637 705-0646-000 R101	1	
242	RSM2C22500F	2	RESISTOR, FXD, 2250 OHMS 1%, 2.5 W 91637 746-9435-000 R99	1	
243	1N645	2	SEMICOND DEVICE 353-2607-000 CR27	1	
244	1N645	2	SEMICOND DEVICE 353-2607-000 CR26	1	
245	2N718A	2	TRANSISTOR 352-0318-000 Q37	1	
246	2N956	2	TRANSISTOR 352-0400-010 Q35	1	
247	2N956	2	TRANSISTOR 352-0400-010 Q36	1	
248	MF1-8 8-25K1PCTTO	2	RESISTOR, FXD, 8250 OHMS 1%, 1/8 W 91637 705-0645-000 R93	1	
249	RC20GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1/2 W 745-1370-000 R94	1	
250	MF1-8 90-9K1PCTTO	2	RESISTOR, FXD, 90,900 OHMS 1%, 1/8 W 91637 705-0670-000 R96	1	
251	CM05E510J03	2	CAPACITOR, FXD, 51 PF 5%, 500 VDCW 912-2795-000 C36	1	
252	RL20S272G	2	RESISTOR, FXD, 2700 OHMS 2%, 1/2 W 745-2625-000 R95	1	
253	151D345X0035X2	2	CAPACITOR, FXD, 3.4 UF 20%, 35 VDCW 56289 184-8269-000 C37	1	
254	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R103	1	
255	151D115X0020W2	2	CAPACITOR, FXD, 1.1 UF 20%, 20 VDCW 56289 184-8276-000 C38	1	
256	MF1-8 162K1PCTTO	2	RESISTOR, FXD, 0.162 MEG 1%, 1/8 W 91637 705-0676-000 R98	1	
257	MF1-8 10K1PCTTO	2	RESISTOR, FXD, 10,000 OHMS 1%, 1/8 W 91637 705-0647-000 R97	1	
258	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R102	1	
259	2N718A	2	TRANSISTOR 352-0318-000 Q38	1	
260	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R108	1	
261	1N645	2	SEMICOND DEVICE 353-2607-000 CR29	1	
262	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R107	1	

GROUP ASSEMBLY PARTS LIST

	FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
	1104 263	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R106	1	
	264	2N718A	2	TRANSISTOR 352-0318-000 Q39	1	
	265	2N718A	2	TRANSISTOR 352-0318-000 Q40	1	
	266	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R105	1	
	267	1N645	2	SEMICOND DEVICE 353-2607-000 CR28	1	
	268	761-7489-001	2	TERMINAL BOARD	1	
R	268A	MS17821-4-9	3	CLAMP 435-1169-100	7	
R	268B	F22NCFMA1-26	3	NUT, SELF-LKG, CLINCH, CAD. PL STL, 2-56 72962 333-0837-000 EFF MCN 299	8	
	269	761-3398-001	3	SPACER P	9	
	270	6009-8A	3	CLIP 91506 139-2336-000	2	
	-271	R4008X3-32CHROMATEDP	3	RIVET, TUBULAR, AL, 0.089 DIA X 3/32 LG SHK 12014 305-0169-000 AP	2	
	272	761-2956-001	3	CLIP, SPG TENS P SB-9	45	
R	273	SL354-351DYEL	3	TERMINAL 12615 306-2474-060	2	
	274	SL354-351DORN	3	TERMINAL 12615 306-2474-050 SB-9	11	
	275	SL354-351DRED	3	TERMINAL 12615 306-2474-040	14	
	276	SL354-351DVIC	3	TERMINAL 12615 306-2474-090 SB-9	4	
	277	SL354-351DBLK	3	TERMINAL 12615 306-2474-020	32	
R	278	SL347-322DWHT	3	TERMINAL 12615 306-1532-000 SB-9	85	
R	279	SL354-351DWHT	3	TERMINAL 12615 306-2474-010 SB-9	139	
	280	761-3409-002	3	TERMINAL BOARD P	1	

GROUP ASSEMBLY PARTS LIST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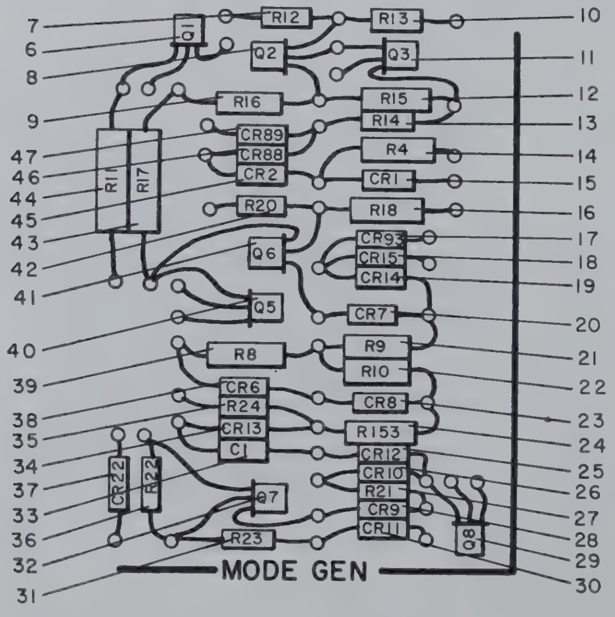
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CR11
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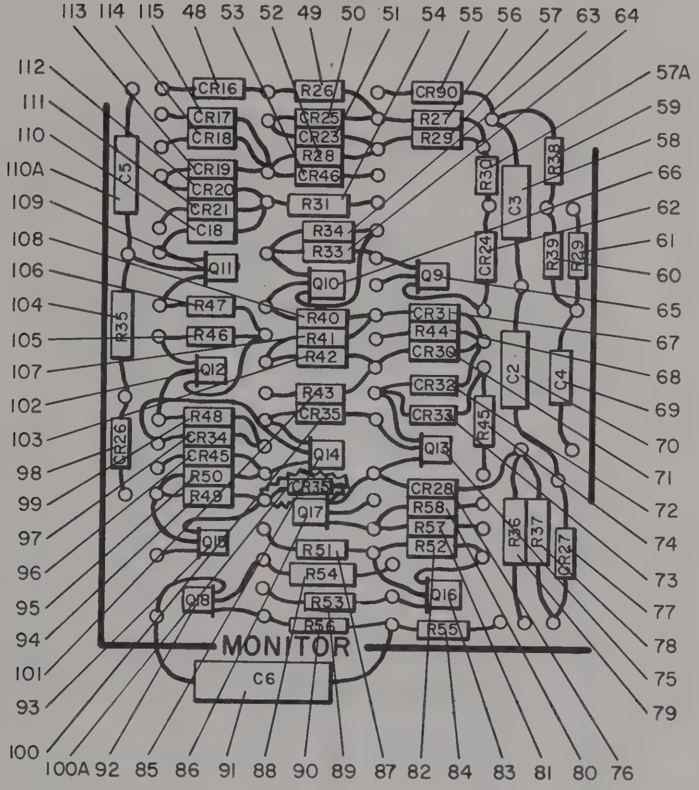
Roll Steering Computer Subassembly No. 2 (Sheet 1 of 5)
Figure 1105

GROUP ASSEMBLY PARTS LIST

DETAIL B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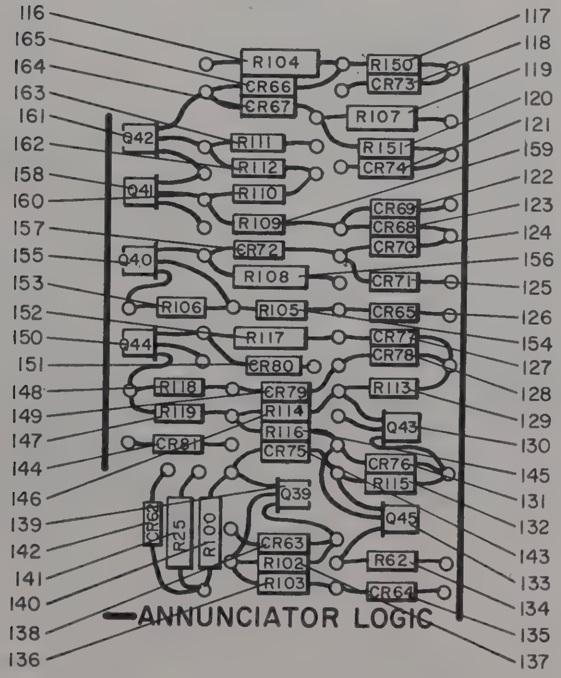
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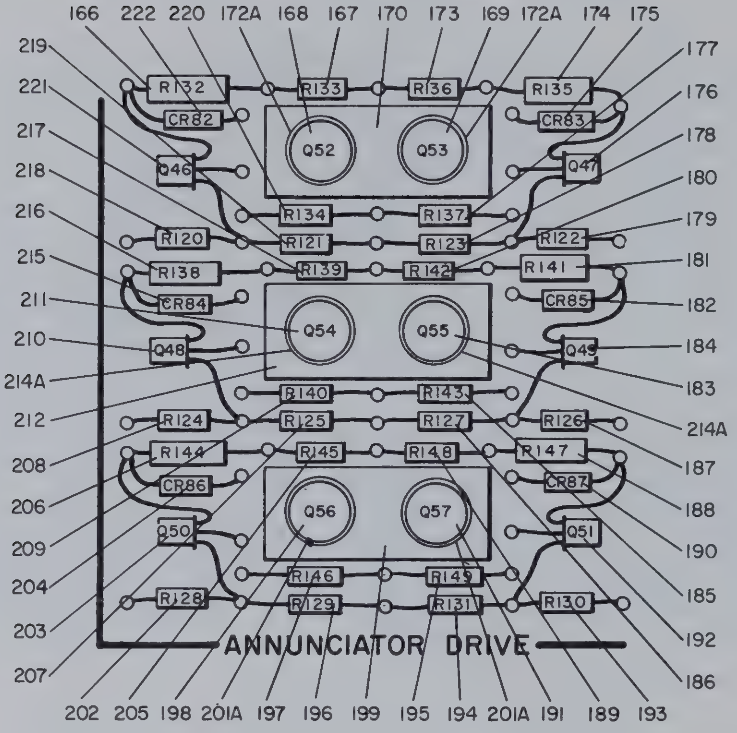
Roll Steering Computer Subassembly No. 2 (Sheet 2 of 5)
Figure 1105

DETAIL D
(EFFECTIVE THRU MCN 539)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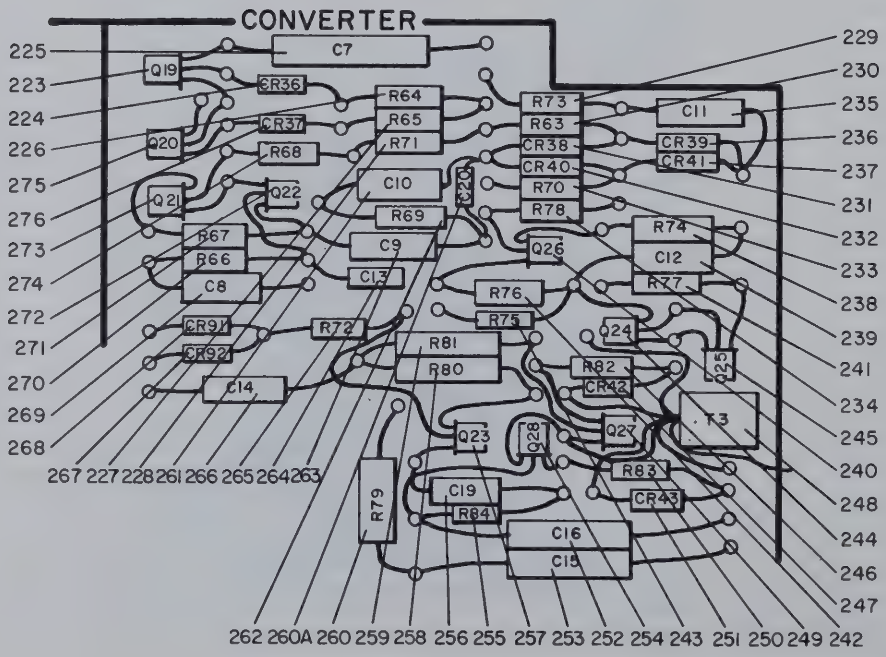
DETAIL E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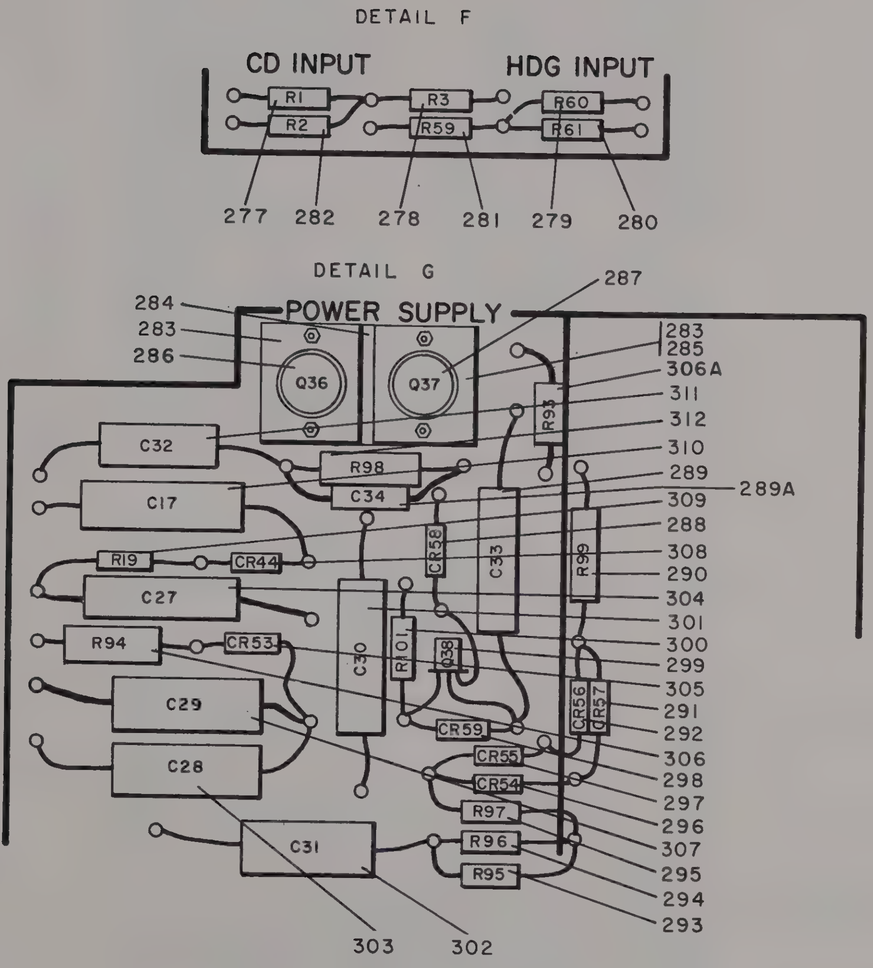
Roll Steering Computer Subassembly No. 2 (Sheet 3 of 5)
Figure 1105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R3
R59
R60
R61
277
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278
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279
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DETAIL G
POWER SUPPLY
284
283
286
287
Q36
Q37
283
285
306A
311
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289A
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C32
R98
C34
C17
R19
CR44
C27
R94
CR53
C29
C28
C31
C30
R101
Q38
CR58
C33
R93
R99
CR56
CR57
CR59
CR55
CR54
R97
R96
R95
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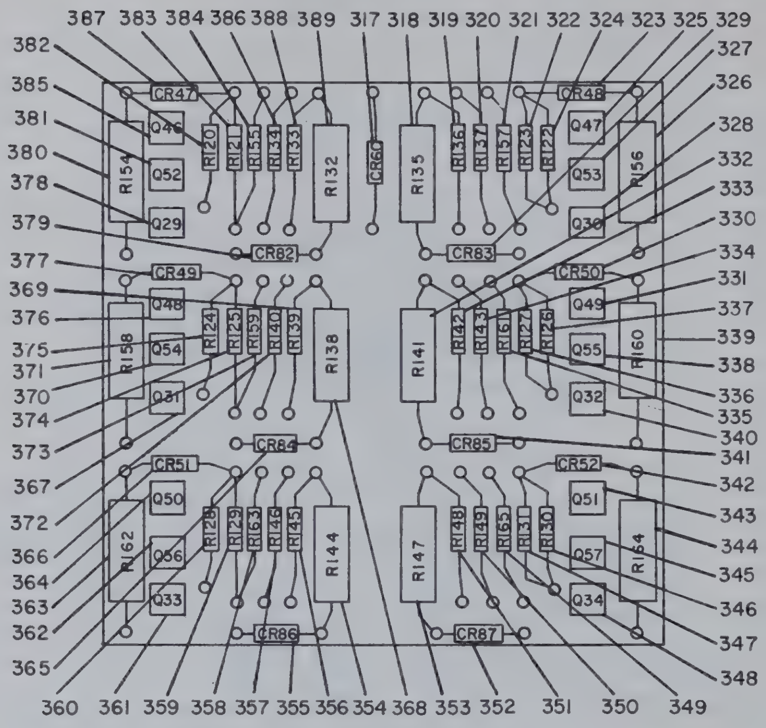
302

Roll Steering Computer Subassembly No. 2 (Sheet 4 of 5)
Figure 1105

GROUP ASSEMBLY PARTS LIST

DETAIL D (EFFECT MCN 540)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CR47 CR48 CR49 CR50 CR51 CR52 CR60 CR82 CR83 CR84 CR85 CR86 CR87
Q46 Q52 Q29 Q47 Q53 Q30 Q48 Q54 Q31 Q49 Q55 Q32 Q50 Q56 Q33 Q51 Q57 Q34
R120 R121 R155 R134 R133 R132 R135 R136 R137 R157 R123 R122 R154 R156
R124 R125 R159 R140 R139 R138 R141 R142 R143 R161 R127 R126 R158 R160
R128 R129 R163 R146 R145 R144 R147 R148 R149 R165 R131 R130 R162 R164

ANNUNCIATOR DRIVE

Roll Steering Computer Subassembly No. 2 (Sheet 5 of 5)
Figure 1105

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
1105 - 0	761-7490-001	1	STEERING COMPUTER SUBASSEMBLY, NO. 2 SEE FIG. 1101-48 FOR NHA TB2	REF	
1	554-2739-002	2	SPACER, BLOCK, LG P	3	
2	554-2740-002	2	SPACER, BLOCK, SHORT P	2	
3	761-3399-001	2	SPACER, SUPPORT BLOCK	1	
- 4	MS51957-15	2	SCREW, MACH., SST, PAN HD, 4-40 X 3/8 343-0135-000 AP FOR 1 THRU 3	3	
- 5	MS35338-78	2	WASHER, LOCK, SST, 0.115 ID, 0.212 OD 310-0279-000 AP FOR 1 THRU 3	3	
6	2N718A	2	TRANSISTOR 352-0318-000 Q1	1	
7	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R12	1	
8	2N718A	2	TRANSISTOR 352-0318-000 Q2	1	
9	RC20GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/2 W 745-1380-000 R16	1	
10	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R13	1	
11	2N718A	2	TRANSISTOR 352-0318-000 Q3	1	

GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
1105 12	RC20GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/2 W 745-1380-000 R15	1	
13	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R14	1	
14	RC20GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/2 W 745-1412-000 R4	1	
15	1N645	2	SEMICOND DEVICE 353-2607-000 CR1	1	
16	RC20GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/2 W 745-1380-000 R18	1	
17	1N645	2	SEMICOND DEVICE 353-2607-000 CR93	1	
18	1N645	2	SEMICOND DEVICE 353-2607-000 CR15	1	
19	1N645	2	SEMICOND DEVICE 353-2607-000 CR14	1	
20	1N645	2	SEMICOND DEVICE 353-2607-000 CR7	1	
21	RC20GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/2 W 745-1412-000 R9	1	
22	RC20GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/2 W 745-1412-000 R10	1	
23	1N645	2	SEMICOND DEVICE 353-2607-000 CR8	1	
24	RC20GF103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/2 W 745-1394-000 R153	1	
25	1N645	2	SEMICOND DEVICE 353-2607-000 CR12	1	
26	1N751A	2	SEMICOND DEVICE, ZENER DIO, 5.1 V 5% 353-2710-000 CR10	1	
27	RC07GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/4 W 745-0800-000 R21	1	
28	1N645	2	SEMICOND DEVICE 353-2607-000 CR9	1	
29	2N718A	2	TRANSISTOR 352-0318-000 Q8	1	
30	1N645	2	SEMICOND DEVICE 353-2607-000 CR11	1	
31	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R23	1	
32	2N2906A	2	TRANSISTOR 352-0610-020 Q7	1	
33	150D105X0035 A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000 C1	1	
34	1N645	2	SEMICOND DEVICE 353-2607-000 CR13	1	
35	RC07GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/4 W 745-0800-000 R24	1	
36	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R22	1	
37	1N645	2	SEMICOND DEVICE 353-2607-000 CR22	1	
38	1N645	2	SEMICOND DEVICE 353-2607-000 CR6	1	
39	RC20GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/2 W 745-1412-000 R8	1	
40	2N718A	2	TRANSISTOR 352-0318-000 Q5	1	
41	2N718A	2	TRANSISTOR 352-0318-000 Q6	1	
42	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R20	1	
43	RC32GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1 W 745-3370-000 R17	1	
44	RC32GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1 W 745-3370-000 R11	1	
45	1N645	2	SEMICOND DEVICE 353-2607-000 CR2	1	
46	1N645	2	SEMICOND DEVICE 353-2607-000 CR88	1	
47	1N645	2	SEMICOND DEVICE 353-2607-000 CR89	1	
48	1N645	2	SEMICOND DEVICE 353-2607-000 CR16	1	
49	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R26	1	

GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
1105 50	1N645	2	SEMICOND DEVICE 353-2607-000 CR25	1	
51	1N645	2	SEMICOND DEVICE 353-2607-000 CR23	1	
52	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R28	1	
53	1N645	2	SEMICOND DEVICE 353-2607-000 CR46	1	
54	MF1-8 82-5K1 PCTTO	2	RESISTOR, FXD, 82,500 OHMS 1%, 1/8 W 91637 705-0669-000 R31	1	
55	1N645	2	SEMICOND DEVICE 353-2607-000 CR90	1	
56	RC07GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/4 W 745-0800-000 R27	1	
57	RC07GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/4 W 745-0800-000 R29	1	
57A	RC07GF824K	2	RESISTOR, FXD, 0.82 MEG 10%, 1/4 W 745-0854-000 R30	1	
58	150D475X0035 B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000 C3	1	
59	RC07GF224K	2	RESISTOR, FXD, 0.22 MEG 10%, 1/4 W 745-0833-000 R38	1	
60	RC07GF563K	2	RESISTOR, FXD, 56,000 OHMS 10%, 1/4 W 745-0812-000 R39	1	
61	1N645	2	SEMICOND DEVICE 353-2607-000 CR29	1	
62	1N645	2	SEMICOND DEVICE 353-2607-000 CR24	1	
63	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R34	1	
64	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R33	1	
65	2N718A	2	TRANSISTOR 352-0318-000 Q9	1	
66	MM2186	2	TRANSISTOR 04713 352-0551-020 Q10	1	
67	1N645	2	SEMICOND DEVICE 353-2607-000 CR31	1	
68	RC07GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/4 W 745-0800-000 R44	1	
69	150D105X0035 A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000 C4	1	
70	150D475X0035 B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000 C2	1	
71	1N645	2	SEMICOND DEVICE 353-2607-000 CR30	1	
72	1N645	2	SEMICOND DEVICE 353-2607-000 CR32	1	
73	1N645	2	SEMICOND DEVICE 353-2607-000 CR33	1	
74	RC07GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/4 W 745-0800-000 R45	1	
75	2N718A	2	TRANSISTOR 352-0318-000 Q13	1	
76	1N965B	2	SEMICOND DEVICE, ZENER DIO, 15 V 5% 353-3176-000 CR28	1	
77	1N645	2	SEMICOND DEVICE 353-2607-000 CR27	1	
78	MF1-8 261K1P CTTO	2	RESISTOR, FXD, 0.261 MEG 1%, 1/8 W 91637 705-0681-000 R37	1	
79	MF1-8 100K1P CTTO	2	RESISTOR, FXD, 0.1 MEG 1%, 1/8 W 91637 705-0671-000 R36	1	
80	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R58	1	
81	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R57	1	
82	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R52	1	
83	MM2186	2	TRANSISTOR 04713 352-0551-020 Q16	1	

GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
1105 84	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R55	1	
85	2N718A	2	TRANSISTOR 352-0318-000 Q14	1	
86	2N718A	2	TRANSISTOR 352-0318-000 Q17	1	
87	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R51	1	
88	RC20GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/2 W 745-1380-000 R54	1	
89	RC07GF271K	2	RESISTOR, FXD, 270 OHMS 10%, 1/4 W 745-0728-000 R53	1	
90	MF1-8 10K1PC TTO	2	RESISTOR, FXD, 10,000 OHMS 1%, 1/8 W 91637 705-0647-000 R56	1	
91	150D476X0035 S2	2	CAPACITOR, FXD, 47 UF 20%, 35 VDCW 56289 184-7411-000 C6	1	
92	2N718A	2	TRANSISTOR 352-0318-000 Q18	1	
93	MM2186	2	TRANSISTOR 04713 352-0551-020 Q15	1	
94	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R49	1	
95	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R50	1	
96	1N645	2	SEMICOND DEVICE 353-2607-000 CR45	1	
97	1N645	2	SEMICOND DEVICE 353-2607-000 CR34	1	
98	1N645	2	SEMICOND DEVICE 353-2607-000 CR26	1	
99	RC07GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/4 W 745-0800-000 R48	1	
100	1N645	2	SEMICOND DEVICE 353-2607-000 DELETED BY SB-2 CR35	1	
100A	1N645	2	SEMICOND DEVICE 353-2607-000 SB-4 CR35	1	
101	RC07GF183K	2	RESISTOR, FXD, 18,000 OHMS 10%, 1/4 W 745-0794-000 R43	1	
102	MM2186	2	TRANSISTOR 04713 352-0551-020 Q12	1	
103	RC07GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/4 W 745-0800-000 R42	1	
104	MF1-8 2-61K1 PCTTO	2	RESISTOR, FXD, 2610 OHMS 1%, 1/8 W 91637 705-0633-000 R35	1	
105	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R46	1	
106	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R47	1	
107	RC07GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/4 W 745-0800-000 R41	1	
108	RC07GF183K	2	RESISTOR, FXD, 18,000 OHMS 10%, 1/4 W 745-0794-000 R40	1	
109	2N718A	2	TRANSISTOR 352-0318-000 Q11	1	
110	150D104X0035 A2	2	CAPACITOR, FXD, 0.10 UF 20%, 35 VDCW 56289 184-7408-000 C18	1	
110A	150D475X0035 B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000 C5	1	
111	1N645	2	SEMICOND DEVICE 353-2607-000 CR21	1	
112	1N645	2	SEMICOND DEVICE 353-2607-000 CR20	1	
113	1N645	2	SEMICOND DEVICE 353-2607-000 CR19	1	
114	1N645	2	SEMICOND DEVICE 353-2607-000 CR18	1	
115	1N645	2	SEMICOND DEVICE 353-2607-000 CR17	1	
116	RC20GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/2 W 745-1380-000 R104	1	

GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
1105 117	RC07GF122K	2	RESISTOR, FXD, 1200 OHMS 10%, 1/4 W 745-0752-000 R150	1	
118	1N645	2	SEMICOND DEVICE 353-2607-000 CR73	1	
119	RC20GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/2 W 745-1380-000 R107	1	
120	RC07GF122K	2	RESISTOR, FXD, 1200 OHMS 10%, 1/4 W 745-0752-000 R151	1	
121	1N645	2	SEMICOND DEVICE 353-2607-000 CR74	1	
122	1N645	2	SEMICOND DEVICE 353-2607-000 CR69	1	
123	1N645	2	SEMICOND DEVICE 353-2607-000 CR68	1	
124	1N645	2	SEMICOND DEVICE 353-2607-000 CR70	1	
125	1N645	2	SEMICOND DEVICE 353-2607-000 CR71	1	
126	1N645	2	SEMICOND DEVICE 353-2607-000 CR65	1	
127	1N645	2	SEMICOND DEVICE 353-2607-000 CR77	1	
128	1N645	2	SEMICOND DEVICE 353-2607-000 CR78	1	
129	RC07GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/4 W 745-0800-000 R113	1	
130	2N718A	2	TRANSISTOR 352-0318-000 Q43	1	
131	1N645	2	SEMICOND DEVICE 353-2607-000 CR76	1	
132	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R115	1	
133	2N718A	2	TRANSISTOR 352-0318-000 Q45	1	
134	RC07GF182K	2	RESISTOR, FXD, 1800 OHMS 10%, 1/4 W 745-0758-000 R62	1	
135	1N645	2	SEMICOND DEVICE 353-2607-000 CR64	1	
136	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R103	1	
137	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R102	1	
138	1N645	2	SEMICOND DEVICE 353-2607-000 CR63	1	
139	MM2186	2	TRANSISTOR 04713 352-0551-020 Q39	1	
140	RC20GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/2 W 745-1380-000 R100	1	
141	RC20GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/2 W 745-1412-000 R25	1	
142	1N645	2	SEMICOND DEVICE 353-2607-000 CR62	1	
143	1N645	2	SEMICOND DEVICE 353-2607-000 CR75	1	
144	1N645	2	SEMICOND DEVICE 353-2607-000 CR81	1	
145	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R116	1	
146	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R114	1	
147	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R119	1	
148	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R118	1	
149	1N645	2	SEMICOND DEVICE 353-2607-000 CR79	1	
150	2N718A	2	TRANSISTOR 352-0318-000 Q44	1	
151	1N645	2	SEMICOND DEVICE 353-2607-000 CR80	1	
152	RC20GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/2 W 745-1380-000 R117	1	
153	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 R106	1	
154	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R105	1	
155	MM2186	2	TRANSISTOR 04713 352-0551-020 Q40	1	

GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
1105 156	RC20GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/2 W 745-1380-000 R108	1	
157	1N645	2	SEMICOND DEVICE 353-2607-000 CR72	1	
158	2N718A	2	TRANSISTOR 352-0318-000 Q41	1	
159	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R109	1	
160	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R110	1	
161	2N718A	2	TRANSISTOR 352-0318-000 Q42	1	
162	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R112	1	
163	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000 R111	1	
164	1N645	2	SEMICOND DEVICE 353-2607-000 CR67	1	
165	1N645	2	SEMICOND DEVICE 353-2607-000 CR66	1	
R 166	RC20GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/2 W 745-1380-000 EFF THRU MCN 539 R132	1	
R 167	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 EFF THRU MCN 539 R133	1	
R 168	2N1132	2	TRANSISTOR 352-0220-000 EFF THRU MCN 539 Q52	1	
R 169	2N1132	2	TRANSISTOR 352-0220-000 EFF THRU MCN 539 Q53	1	
R 170	3005A	2	HEAT SINK 13103 352-9542-020 EFF THRU MCN 539	1	
-171	P330-2250-00 0	2	SCREW, MACH., NYLON, SLOT. FIL H, 4-40 X 3/16 77250 330-2250-000 AP	2	
-172	302-0348-000	2	INSULATOR, WASH. 91500 AP	2	
172A	3005BNYLON	3	HEAT SINK 13103 352-9542-030	2	
R 173	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 EFF THRU MCN 539 R136	1	
R 174	RC20GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/2 W 745-1380-000 EFF THRU MCN 539 R135	1	
R 175	1N645	2	SEMICOND DEVICE 353-2607-000 EFF THRU MCN 539 CR83	1	
R 176	2N718A	2	TRANSISTOR 352-0318-000 EFF THRU MCN 539 Q47	1	
R 177	RC07GF223K	2	RESISTOR, FXD, 22,000 OHMS 10%, 1/4 W 745-0797-000 EFF THRU MCN 539 R137	1	
R 178	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000 EFF THRU MCN 539 R123	1	
R 179	RC07GF102K	2	RESISTOR, FXD, 1000 OHMS 10%, 1/4 W 745-0749-000 EFF THRU MCN 539 R122	1	
R 180	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 EFF THRU MCN 539 R142	1	
R 181	RC20GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/2 W 745-1380-000 EFF THRU MCN 539 R141	1	
R 182	1N645	2	SEMICOND DEVICE 353-2607-000 EFF THRU MCN 539 CR85	1	
R 183	2N1132	2	TRANSISTOR 352-0220-000 EFF THRU MCN 539 Q55	1	

GROUP ASSEMBLY PARTS LIST

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
R 1105 184	2N718A	2	TRANSISTOR 352-0318-000 EFF THRU MCN 539 Q49	1	
R 185	RC07GF223K	2	RESISTOR, FXD, 22,000 OHMS 10%, 1/4 W 745-0797-000 EFF THRU MCN 539 R143	1	
R 186	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000 EFF THRU MCN 539 R127	1	
R 187	RC07GF102K	2	RESISTOR, FXD, 1000 OHMS 10%, 1/4 W 745-0749-000 EFF THRU MCN 539 R126	1	
R 188	RC20GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/2 W 745-1380-000 EFF THRU MCN 539 R147	1	
R 189	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 EFF THRU MCN 539 R148	1	
R 190	1N645	2	SEMICOND DEVICE 353-2607-000 EFF THRU MCN 539 CR87	1	
R 191	2N1132	2	TRANSISTOR 352-0220-000 EFF THRU MCN 539 Q57	1	
R 192	2N718A	2	TRANSISTOR 352-0318-000 EFF THRU MCN 539 Q51	1	
R 193	RC07GF102K	2	RESISTOR, FXD, 1000 OHMS 10%, 1/4 W 745-0749-000 EFF THRU MCN 539 R130	1	
R 194	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000 EFF THRU MCN 539 R131	1	
R 195	RC07GF223K	2	RESISTOR, FXD, 22,000 OHMS 10%, 1/4 W 745-0797-000 EFF THRU MCN 539 R149	1	
R 196	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000 EFF THRU MCN 539 R129	1	
R 197	RC07GF223K	2	RESISTOR, FXD, 22,000 OHMS 10%, 1/4 W 745-0797-000 EFF THRU MCN 539 R146	1	
R 198	2N1132	2	TRANSISTOR 352-0220-000 EFF THRU MCN 539 Q56	1	
R 199	3005A	2	HEAT SINK 13103 352-9542-020 EFF THRU MCN 539	1	
-200	P330-2250-00 0	2	SCREW, MACH., NYLON, SLOT. FIL H, 4-40 X 3/16 77250 330-2250-000 AP	2	
-201	302-0348-000	2	INSULATOR, WASH. 91500 AP	2	
201A	3005BNYLON	3	HEAT SINK 13103 352-9542-030	2	
R 202	RC07GF102K	2	RESISTOR, FXD, 1000 OHMS 10%, 1/4 W 745-0749-000 EFF THRU MCN 539 R128	1	
R 203	2N718A	2	TRANSISTOR 352-0318-000 EFF THRU MCN 539 Q50	1	
R 204	1N645	2	SEMICOND DEVICE 353-2607-000 EFF THRU MCN 539 CR86	1	
R 205	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 EFF THRU MCN 539 R145	1	
R 206	RC20GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/2 W 745-1380-000 EFF THRU MCN 539 R144	1	
R 207	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000 EFF THRU MCN 539 R125	1	
R 208	RC07GF102K	2	RESISTOR, FXD, 1000 OHMS 10%, 1/4 W 745-0749-000 EFF THRU MCN 539 R124	1	

GROUP ASSEMBLY PARTS LIST

	FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
R	1105 209	RC07GF223K	2	RESISTOR, FXD, 22,000 OHMS 10%, 1/4 W 745-0797-000 EFF THRU MCN 539	R140	1	
R	210	2N718A	2	TRANSISTOR 352-0318-000 EFF THRU MCN 539	Q48	1	
R	211	2N1132	2	TRANSISTOR 352-0220-000 EFF THRU MCN 539	Q54	1	
R	212	3005A	2	HEAT SINK 13103 352-9542-020 EFF THRU MCN 539		1	
	-213	P330-2250-00 0	2	SCREW, MACH., NYLON, SLOT. FIL H, 4-40 X 3/16 77250 330-2250-000 AP		2	
R	-214	302-0348-000	2	INSULATOR, WASH. 91500 AP		2	
	214A	3005BNYLON	3	HEAT SINK 13103 352-9542-030		2	
R	215	1N645	2	SEMICOND DEVICE 353-2607-000 EFF THRU MCN 539	CR84	1	
R	216	RC20GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/2 W 745-1380-000 EFF THRU MCN 539	R138	1	
R	217	RC07F103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000 EFF THRU MCN 539	R139	1	
R	218	RC07GF102K	2	RESISTOR, FXD, 1000 OHMS 10%, 1/4 W 745-0749-000 EFF THRU MCN 539	R120	1	
R	219	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000 EFF THRU MCN 539	R121	1	
R	220	RC07GF223K	2	RESISTOR, FXD, 22,000 OHMS 10%, 1/4 W 745-0797-000 EFF THRU MCN 539	R134	1	
R	221	2N718A	2	TRANSISTOR 352-0318-000 EFF THRU MCN 539	Q46	1	
R	222	1N645	2	SEMICOND DEVICE 353-2607-000 EFF THRU MCN 539	CR82	1	
	223	2N718A	2	TRANSISTOR 352-0318-000	Q19	1	
	224	1N645	2	SEMICOND DEVICE 353-2607-000	CR36	1	
	225	151D345X0035 X2	2	CAPACITOR, FXD, 3.4 UF 20%, 35 VDCW 56289 184-8269-000	C7	1	
	226	RC20GF562K	2	RESISTOR, FXD, 5600 OHMS 10%, 1/2 W 745-1384-000	R64	1	
	227	RC20GF562K	2	RESISTOR, FXD, 5600 OHMS 10%, 1/2 W 745-1384-000	R65	1	
	228	RC20GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/2 W 745-1380-000	R71	1	
	229	MF1-8 2-15K1 PCTTO	2	RESISTOR, FXD, 2150 OHMS 1%, 1/8 W 91637 705-0632-000	R73	1	
	230	MF1-8 4-22K1 PCTTO	2	RESISTOR, FXD, 4220 OHMS 1%, 1/8 W 91637 705-0638-000	R63	1	
	231	1N645	2	SEMICOND DEVICE 353-2607-000	CR38	1	
	232	1N645	2	SEMICOND DEVICE 353-2607-000	CR40	1	
	233	MF1-8 8-25K1 PCTTO	2	RESISTOR, FXD, 8250 OHMS 1%, 1/8 W 91637 705-0645-000	R70	1	
	234	RC20GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1/2 W 745-1370-000	R78	1	
	235	150D475X0035 B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000	C11	1	
	236	1N645	2	SEMICOND DEVICE 353-2607-000	CR39	1	
	237	1N645	2	SEMICOND DEVICE 353-2607-000	CR41	1	

GROUP ASSEMBLY PARTS LIST

	FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
	1105 238A 238	MF1-8 8-11K1PCTTO	2	RESISTOR, FXD, 5110 OHMS 1%, 1/8 W 91637 705-0640-000	R74	1	
	239	150D475X0035B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000	C12	1	
	240	2N718A	2	TRANSISTOR 352-0318-000	Q26	1	
	241	MF1-8 68-1K1PCTTO	2	RESISTOR, FXD, 68,100 OHMS 1%, 1/8 W 91637 705-0667-000	R77	1	
	242	MF1-8 90-9K1PCTTO	2	RESISTOR, FXD, 90,900 OHMS 1%, 1/8 W 91637 705-0670-000	R76	1	
	243	MF1-8 10K1PCTTO	2	RESISTOR, FXD, 10,000 OHMS 1%, 1/8 W 91637 705-0647-000	R75	1	
	244	2N956	2	TRANSISTOR 352-0400-010	Q24	1	
	245	2N956	2	TRANSISTOR 352-0400-010	Q25	1	
	246	MF1-8 8-11K1PCTTO	2	RESISTOR, FXD, 5110 OHMS 1%, 1/8 W 91637 705-0640-000	R82	1	
	247	1N645	2	SEMICOND DEVICE 353-2607-000	CR42	1	
	248	DH226	2	TRANSFORMER 80223 677-1485-000	T3	1	
R	249	2N718A	2	TRANSISTOR 352-0318-000 EFF THRU MCN 130	Q27	1	
R	249	RT4737	2	TRANSISTOR 07933 352-0692-040 EFF MCN 131 SB-7	Q27	1	
	250	MF1-8 8-11K1PCTTO	2	RESISTOR, FXD, 5110 OHMS 1%, 1/8 W 91637 705-0640-000	R83	1	
	251	1N645	2	SEMICOND DEVICE 353-2607-000	CR43	1	
	252	CL27BL1R5TN3	2	CAPACITOR, FXD, 1.5 UF 10%, 75 VDCW 184-8607-000	C15	1	
	253	CL27BL1R5TN3	2	CAPACITOR, FXD, 1.5 UF 10%, 75 VDCW 184-8607-000	C16	1	
R	254	2N718A	2	TRANSISTOR 352-0318-000 EFF THRU MCN 130	Q28	1	
R	254	RT4737	2	TRANSISTOR 07933 352-0692-040 EFF MCN 131 SB-7	Q28	1	
	255	RC07GF332K	2	RESISTOR, FXD, 3300 OHMS 10%, 1/4 W 745-0767-000	R84	1	
	256	150D475X0035B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000	C19	1	
	257	2N718A	2	TRANSISTOR 352-0318-000	Q23	1	
	258	M51-4 1K1PCTTO	2	RESISTOR, FXD, 1000 OHMS 1%, 1/4 W 91637 724-0397-000	R80	1	
	259	M51-4 1K1PCTTO	2	RESISTOR, FXD, 1000 OHMS 1%, 1/4 W 91637 724-0397-000	R81	1	
	260	RSM2C15500F	2	RESISTOR, FXD, 1550 OHMS 1%, 2.5 W 91637 746-9431-000	R79	1	
	260A	CM05F121J03	2	CAPACITOR, FXD, 120 PF 5%, 500 VDCW 912-2822-000	C20	1	
	261	150D475X0035B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000	C10	1	
	262	MF1-8 2-15K1PCTTO	2	RESISTOR, FXD, 2150 OHMS 1%, 1/8 W 91637 705-0632-000	R69	1	
	263	150D475X0035B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000	C9	1	
	264	150D105X0035A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000	C13	1	
	265	MF1-8 10K1PCTTO	2	RESISTOR, FXD, 10,000 OHMS 1%, 1/8 W 91637 705-0647-000	R72	1	

GROUP ASSEMBLY PARTS LIST

	FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
	1105 266	150D475X0035 B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000	C14	1	
	267	1N645	2	SEMICOND DEVICE 353-2607-000	CR92	1	
	268	1N645	2	SEMICOND DEVICE 353-2607-000	CR91	1	
	269	150D475X0035 B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000	C8	1	
	270	MF1-8 8-25K1 PCTTO	2	RESISTOR, FXD, 8250 OHMS 1%, 1/8 W 91637 705-0645-000	R66	1	
	271	MF1-8 90-9K1 PCTTO	2	RESISTOR, FXD, 90,900 OHMS 1%, 1/8 W 91637 705-0670-000	R67	1	
	272	2N956	2	TRANSISTOR 352-0400-010	Q22	1	
	273	2N956	2	TRANSISTOR 352-0400-010	Q21	1	
	274	RL20S272G	2	RESISTOR, FXD, 2700 OHMS 2%, 1/2 W 745-2625-000	R68	1	
	275	MM2186	2	TRANSISTOR 04713 352-0551-020	Q20	1	
	276	1N645	2	SEMICOND DEVICE 353-2607-000	CR37	1	
	277	MF1-8 31-6K1 PCTTO	2	RESISTOR, FXD, 31,600 OHMS 1%, 1/8 W 91637 705-0659-000	R1	1	
	278	MF1-8 10K1PC TTO	2	RESISTOR, FXD, 10,000 OHMS 1%, 1/8 W 91637 705-0647-000	R3	1	
	279	MF1-8 14-7K1 PCTTO	2	RESISTOR, FXD, 14,700 OHMS 1%, 1/8 W 91637 705-0651-000	R60	1	
	280	MF1-8 10K1PC TTO	2	RESISTOR, FXD, 10,000 OHMS 1%, 1/8 W 91637 705-0647-000	R61	1	
	281	MF1-8 31-6K1 PCTTO	2	RESISTOR, FXD, 31,600 OHMS 1%, 1/8 W 91637 705-0659-000	R59	1	
	282	MF1-8 14-7K1 PCTTO	2	RESISTOR, FXD, 14,700 OHMS 1%, 1/8 W 91637 705-0651-000	R2	1	
R	283	768-1922-001	2	HEAT SINK, ELECTRICAL EFF MCN 540		4	
R	284	768-1921-001	2	INSULATOR, PLATE EFF MCN 540		2	
R	-284A	68-1660-40	2	NUT, SELF-LKG, HEX., AL, 4-40 72962 333-0605-000 AP FOR 283 AND 284		4	
R	-284B	302-0488-000	2	WASHER, NM, POLYPHENYLENE OXIDE, 0.117 ID, 0.375 OD COML AP FOR 283 AND 284		4	
R	-284C	MS51957-17	2	SCREW, MACH., SST, PAN HD, 4-40 X 1/2 343-0137-000 AP FOR 283 AND 284		4	
R	285	3005A	2	HEAT SINK 13103 352-9542-020 EFF THRU MCN 539		1	
R	-285A	P330-2250-00 O	2	SCREW, MACH., NYLON, SLOT. FIL H, 4-40 X 3/16 77250 330-2250-000 EFF THRU MCN 539 AP		2	
R	-285B	302-0348-000	2	INSULATOR, WASH. 91500 EFF THRU MCN 539 AP		2	
R	-285C	3005BNYLON	3	HEAT SINK 13103 352-9542-030 EFF THRU MCN 539		2	
R	286	2N697	2	TRANSISTOR 352-0197-000 EFF THRU MCN 539	Q36	1	
R	286	2N1711	2	TRANSISTOR 352-0400-000 EFF MCN 540	Q36	1	
R	287	2N3053	2	TRANSISTOR 352-0613-010	Q37	1	
R	288	1N645	2	SEMICOND DEVICE 353-2607-000 EFF THRU MCN 539	CR58	1	

GROUP ASSEMBLY PARTS LIST

	FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
R	1105 289	CL24BJ180TP3	2 2	CAPACITOR, FXD, 18 UF P50M15%, 50 VDCW 184-7036-000 EFF THRU MCN 539	C33	1	
R	289	109D336X0075 F2	2	CAPACITOR, FXD, 33 UF 20%, 75 VDCW 56289 184-7774-000 EFF MCN 540	C33	1	
R	289A	CK06CW103M	2	CAPACITOR, FXD, 10,000 PF 20%, 200 VDCW 913-4001-000 EFF MCN 540	C34	1	
	290	RSM2C10000J	2	RESISTOR, FXD, 1000 OHMS 1%, 2.5 W 91637 746-9414-000	R99	1	
R	291	1N645	2	SEMICOND DEVICE 353-2607-000 EFF THRU MCN 539	CR57	1	
R	291	1N4003	2	SEMICOND DEVICE 353-6442-030 EFF MCN 540	CR57	1	
R	292	1N645	2	SEMICOND DEVICE 353-2607-000 EFF THRU MCN 539	CR56	1	
R	292	1N4003	2	SEMICOND DEVICE 353-6442-030 EFF MCN 540	CR56	1	
	293	MF1-8 19-6K1 PCTTO	2	RESISTOR, FXD, 19,600 OHMS 1%, 1/8 W 91637 705-0654-000	R95	AR	
	293	MF4-8 21-5K1 PCTTO	2	RESISTOR, FXD, 21,500 OHMS 1%, 1/8 W 91637 705-0655-000	R95	AR	
	293	MF1-8 23-7K1 PCTTO	2	RESISTOR, FXD, 23,700 OHMS 1%, 1/8 W 91637 705-0656-000	R95	AR	
	293	MF1-8 26-1K1 PCTTO	2	RESISTOR, FXD, 26,100 OHMS 1%, 1/8 W 91637 705-0657-000	R95	AR	
	293	MF1-8 28-7K1 PCTTO	2	RESISTOR, FXD, 28,700 OHMS 1%, 1/8 W 91637 705-0658-000	R95	AR	
	293	MF1-8 31-6K1 PCTTO	2	RESISTOR, FXD, 31,600 OHMS 1%, 1/8 W 91637 705-0659-000	R95	AR	
	293	MF1-8 34-8K1 PCTTO	2	RESISTOR, FXD, 34,800 OHMS 1%, 1/8 W 91637 705-0660-000	R95	AR	
	293	MF1-8 38-3K1 PCTTO	2	RESISTOR, FXD, 38,300 OHMS 1%, 1/8 W 91637 705-0661-000	R95	AR	
	293	MF1-8 42-2K1 PCTTO	2	RESISTOR, FXD, 42,200 OHMS 1%, 1/8 W 91637 705-0662-000	R95	AR	
	293	MF1-8 46-4K1 PCTTO	2	RESISTOR, FXD, 46,400 OHMS 1%, 1/8 W 91637 705-0663-000	R95	AR	
	293	MF1-8 51-1K1 PCTTO	2	RESISTOR, FXD, 51,100 OHMS 1%, 1/8 W 91637 705-0664-000	R95	AR	
	293	MF1-8 56-2K1 PCTTO	2	RESISTOR, FXD, 56,200 OHMS 1%, 1/8 W 91637 705-0665-000	R95	AR	
	293	MF1-8 61-9K1 PCTTO	2	RESISTOR, FXD, 61,900 OHMS 1%, 1/8 W 91637 705-0666-000	R95	AR	
	293	MF1-8 68-1K1 PCTTO	2	RESISTOR, FXD, 68,100 OHMS 1%, 1/8 W 91637 705-0667-000	R95	AR	
	293	MF1-8 75K1PC TTO	2	RESISTOR, FXD, 75,000 OHMS 1%, 1/8 W 91637 705-0668-000	R95	AR	
	293	MF1-8 82-5K1 PCTTO	2	RESISTOR, FXD, 82,500 OHMS 1%, 1/8 W 91637 705-0669-000	R95	AR	
	293	MF1-8 90-9K1 PCTTO	2	RESISTOR, FXD, 90,900 OHMS 1%, 1/8 W 91637 705-0670-000	R95	AR	
	293	MF1-8 100K1P CTTO	2	RESISTOR, FXD, 0.1 MEG 1%, 1/8 W 91637 705-0671-000	R95	AR	
	293	MF1-8 110K1P CTTO	2	RESISTOR, FXD, 0.11 MEG 1%, 1/8 W 91637 705-0672-000	R95	AR	

GROUP ASSEMBLY PARTS LIST

	FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
	1105 293	MF1-8 121K1P CTTO	2	RESISTOR, FXD, 0.121 MEG 1%, 1/8 W 91637 705-0673-000 R95	AR	
	293	MF1-8 133K1P CTTO	2	RESISTOR, FXD, 0.133 MEG 1%, 1/8 W 91637 705-0674-000 R95	AR	
	293	MF1-8 147K1P CTTO	2	RESISTOR, FXD, 0.147 MEG 1%, 1/8 W 91637 705-0675-000 R95	AR	
	293	MF1-8 162K1P CTTO	2	RESISTOR, FXD, 0.162 MEG 1%, 1/8 W 91637 705-0676-000 R95	AR	
	293	MF1-8 178K1P CTTO	2	RESISTOR, FXD, 0.178 MEG 1%, 1/8 W 91637 705-0677-000 R95	AR	
	293	MF1-8 196K1P CTTO	2	RESISTOR, FXD, 0.196 MEG 1%, 1/8 W 91637 705-0678-000 R95	AR	
	294	RL20S153G	2	RESISTOR, FXD, 15,000 OHMS 2%, 1/2 W 745-2670-000 R96	1	
	295	RL20S272G	2	RESISTOR, FXD, 2700 OHMS 2%, 1/2 W 745-2625-000 R97	1	
R	296	1N645	2	SEMICOND DEVICE 353-2607-000 EFF THRU MCN 629 CR54	1	
R	296	1N4003	2	SEMICOND DEVICE 353-6442-030 EFF MCN 630 CR54	1	
R	297	1N645	2	SEMICOND DEVICE 353-2607-000 EFF THRU MCN 629 CR55	1	
R	297	1N4003	2	SEMICOND DEVICE 353-6442-030 EFF MCN 630 CR55	1	
	298	1N751A	2	SEMICOND DEVICE, ZENER DIO, 5.1 V 5% 353-2710-000 CR59	1	
	299	2N718A	2	TRANSISTOR 352-0318-000 Q38	1	
	300	RC20GF562K	2	RESISTOR, FXD, 5600 OHMS 10%, 1/2 W 745-1384-000 R101	1	
	301	118P10402S4	2	CAPACITOR, FXD, 100,000 PF 20%, 200 VDCW 56289 951-1036-000 C30	1	
R	302	150D476X0035 S2	2	CAPACITOR, FXD, 47 UF 20%, 35 VDCW 56289 184-7411-000 EFF THRU MCN 629 C31	1	
R	302	109D476X0050 F2	2	CAPACITOR, FXD, 47 UF 20%, 50 VDCW 56289 184-7788-000 EFF MCN 630 C31	1	
	303	109D566X0075 T2	2	CAPACITOR, FXD, 56 UF 20%, 75 VDCW 56289 184-7793-000 C28	1	
	304	109D566X0075 T2	2	CAPACITOR, FXD, 56 UF 20%, 75 VDCW 56289 184-7793-000 C27	1	
	305	1N645	2	SEMICOND DEVICE 353-2607-000 CR53	1	
	306	RSM2C10R00F	2	RESISTOR, FXD, 10 OHMS 1%, 2.5 W 91637 746-9442-000 R94	1	
R	306A	RW69V181	2	RESISTOR, FXD, 680 OHMS 10%, 3 W 747-5345-000 EFF MCN 540 R93	1	
	307	118P10402S4	2	CAPACITOR, FXD, 100,000 PF 20%, 200 VDCW 56289 951-1036-000 C29	1	
	308	1N645	2	SEMICOND DEVICE 353-2607-000 CR44	1	
	309	RC07GF560K	2	RESISTOR, FXD, 56 OHMS 10%, 1/4 W 745-0704-000 R19	1	
	310	118P10402S4	2	CAPACITOR, FXD, 100,000 PF 20%, 200 VDCW 56289 951-1036-000 C17	1	
R	311	109D476X0050 F2	2	CAPACITOR, FXD, 47 UF 20%, 50 VDCW 56289 184-7788-000 EFF THRU MCN 629 C32	1	

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	FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
R	1105 311	109D566X0075T2	2	CAPACITOR, FXD, 56 UF 20%, 75 VDCW 56289 184-7793-000 EFF MCN 630	C32	1	
R	312	RSM2C10R00F	2	RESISTOR, FXD, 10 OHMS 1%, 2.5 W 91637 746-9442-000 EFF THRU MCN 629	R98	1	
R	312	RW69V270	2	RESISTOR, FXD, 3600 OHMS 5%, 3 W 747-5375-000 EFF MCN 630	R98	1	
	313	4007-4HOTTINNED	2	TERMINAL 77147 304-0015-000		1	
	-314	P313-0051-000	2	NUT, PLAIN, HEX., NI PL BRS, 4-40 77250 313-0051-000 AP		1	
	-315	310-0076-000	2	WASHER, LOCK, BRZ, 0.115 ID, 0.212 OD COML AP		1	
	-316	P343-0285-000	2	SCREW, MACH., NI PL BRS, PAN HD, 4-40 X 1/4 77250 343-0285-000 AP		1	
R	317	1N4003	2	SEMICOND DEVICE 353-6442-030 EFF MCN 540	CR60	1	
R	318	RC32GF152K	2	RESISTOR, FXD, 1500 OHMS 10%, 1 W 745-3359-000 EFF MCN 540	R135	1	
R	319	RC07GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1/4 W 745-0764-000 EFF MCN 540	R136	1	
R	320	RC07GF223K	2	RESISTOR, FXD, 22,000 OHMS 10%, 1/4 W 745-0797-000 EFF MCN 540	R137	1	
R	321	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000 EFF MCN 540	R157	1	
R	322	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000 EFF MCN 540	R123	1	
R	323	1N4756	2	SEMICOND DEVICE, ZENER DIO, 47 V 5% 353-6481-580 EFF MCN 540	CR48	1	
R	324	RC07GF102K	2	RESISTOR, FXD, 1000 OHMS 10%, 1/4 W 745-0749-000 EFF MCN 540	R122	1	
R	325	2N956	2	TRANSISTOR 352-0400-010 EFF MCN 540	Q47	1	
R	326	RC32GF152K	2	RESISTOR, FXD, 1500 OHMS 10%, 1 W 745-3359-000 EFF MCN 540	R156	1	
R	327	MM2186	2	TRANSISTOR 04713 352-0551-020 EFF MCN 540	Q53	1	
R	328	2N956	2	TRANSISTOR 352-0400-010 EFF MCN 540	Q30	1	
R	329	1N4003	2	SEMICOND DEVICE 353-6442-030 EFF MCN 540	CR83	1	
R	330	2N956	2	TRANSISTOR 352-0400-010 EFF MCN 540	CR50	1	
R	331	2N956	2	TRANSISTOR 352-0400-010 EFF MCN 540	Q49	1	
R	332	RC32GF152K	2	RESISTOR, FXD, 1500 OHMS 10%, 1 W 745-3359-000 EFF MCN 540	R141	1	
R	333	RC07GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1/4 W 745-0764-000 EFF MCN 540	R142	1	
R	334	RC07GF223K	2	RESISTOR, FXD, 22,000 OHMS 10%, 1/4 W 745-0797-000 EFF MCN 540	R143	1	
R	335	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000 EFF MCN 540	R161	1	
R	336	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000 EFF MCN 540	R127	1	

GROUP ASSEMBLY PARTS LIST

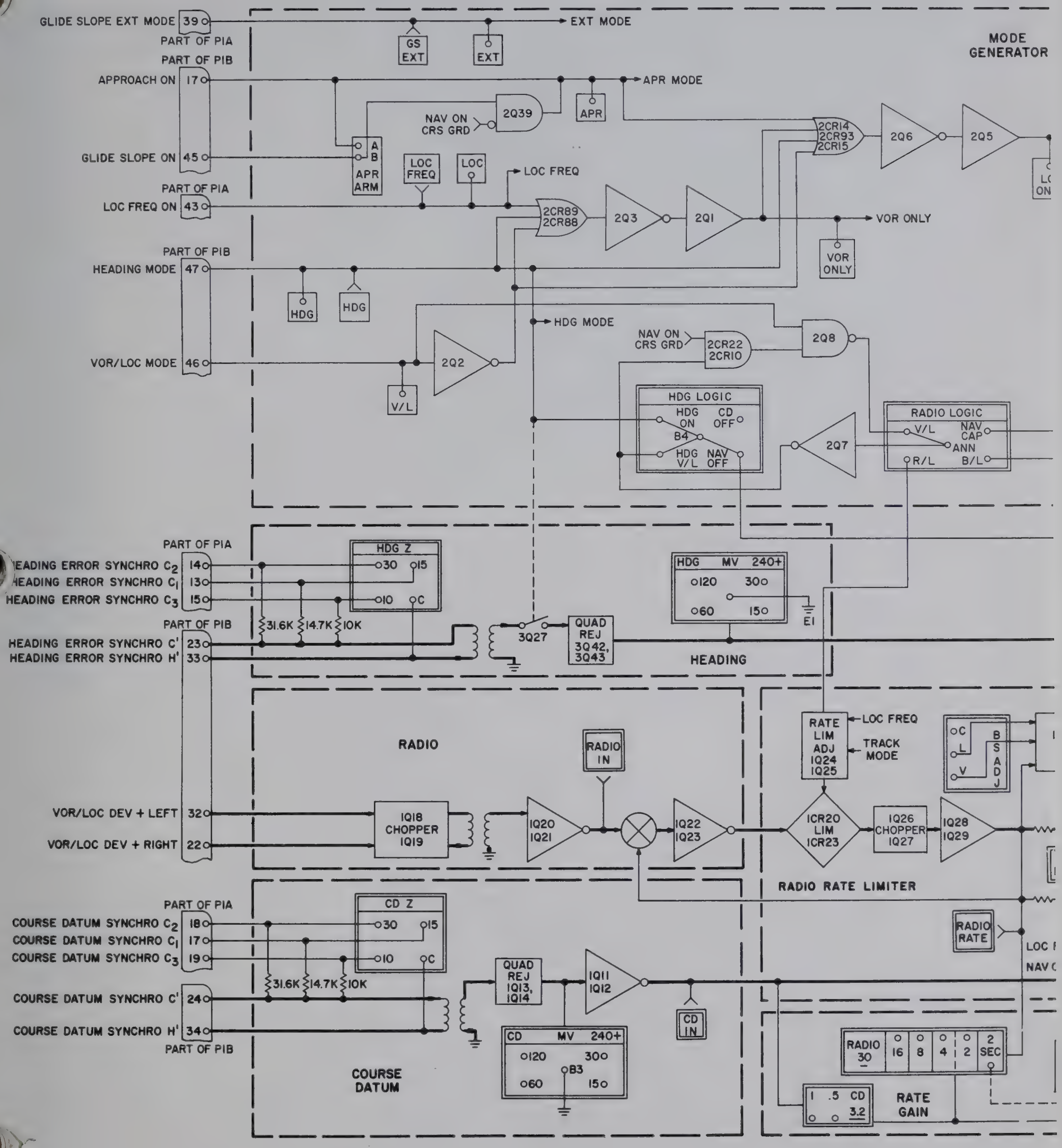
FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
R 1105 337	RC07GF102K	2	RESISTOR, FXD, 1000 OHMS 10%, 1/4 W 745-0749-000 EFF MCN 540 R126	1	
R 338	MM2186	2	TRANSISTOR 04713 352-0551-020 EFF MCN 540 Q55	1	
R 339	RC32GF152K	2	RESISTOR, FXD, 1500 OHMS 10%, 1 W 745-3359-000 EFF MCN 540 R160	1	
R 340	2N956	2	TRANSISTOR 352-0400-010 EFF MCN 540 Q32	1	
R 341	1N4003	2	SEMICOND DEVICE 353-6442-030 EFF MCN 540 CR85	1	
R 342	1N4756	2	SEMICOND DEVICE, ZENER DIO, 47 V 5% 353-6481-580 EFF MCN 540 CR52	1	
R 343	2N956	2	TRANSISTOR 352-0400-010 EFF MCN 540 Q51	1	
R 344	RC32GF152K	2	RESISTOR, FXD, 1500 OHMS 10%, 1 W 745-3359-000 EFF MCN 540 R164	1	
R 345	2N2907	2	TRANSISTOR 352-0551-000 EFF MCN 540 Q57	1	
R 346	RC07GF102K	2	RESISTOR, FXD, 1000 OHMS 10%, 1/4 W 745-0749-000 EFF MCN 540 R130	1	
R 347	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000 EFF MCN 540 R131	1	
R 348	2N956	2	TRANSISTOR 352-0400-010 EFF MCN 540 Q34	1	
R 349	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000 EFF MCN 540 R165	1	
R 350	RC07GF223K	2	RESISTOR, FXD, 22,000 OHMS 10%, 1/4 W 745-0797-000 EFF MCN 540 R149	1	
R 351	RC07GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1/4 W 745-0764-000 EFF MCN 540 R148	1	
R 352	1N4003	2	SEMICOND DEVICE 353-6442-030 EFF MCN 540 CR87	1	
R 353	RC32GF152K	2	RESISTOR, FXD, 1500 OHMS 10%, 1 W 745-3359-000 EFF MCN 540 R147	1	
R 354	RC32GF152K	2	RESISTOR, FXD, 1500 OHMS 10%, 1 W 745-3359-000 EFF MCN 540 R144	1	
R 355	1N4003	2	SEMICOND DEVICE 353-6442-030 EFF MCN 540 CR86	1	
R 356	RC07GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1/4 W 745-0764-000 EFF MCN 540 R145	1	
R 357	RC07GF223K	2	RESISTOR, FXD, 22,000 OHMS 10%, 1/4 W 745-0797-000 EFF MCN 540 R146	1	
R 358	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000 EFF MCN 540 R163	1	
R 359	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000 EFF MCN 540 R129	1	
R 360	RC07GF102K	2	RESISTOR, FXD, 1000 OHMS 10%, 1/4 W 745-0749-000 EFF MCN 540 R128	1	
R 361	2N956	2	TRANSISTOR 352-0400-010 EFF MCN 540 Q33	1	
R 362	MM2186	2	TRANSISTOR 04713 352-0551-020 EFF MCN 540 Q56	1	

GROUP ASSEMBLY PARTS LIST

	FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
R	1105 363	RC32GF152K	2	RESISTOR, FXD, 1500 OHMS 10%, 1 W 745-3359-000 EFF MCN 540	R162	1	
R	364	2N956	2	TRANSISTOR 352-0400-010 EFF MCN 540	Q50	1	
R	365	1N4003	2	SEMICOND DEVICE 353-6442-030 EFF MCN 540	CR84	1	
R	366	1N4756	2	SEMICOND DEVICE, ZENER DIO, 47 V 5% 353-6481-580 EFF MCN 540	CR51	1	
R	367	67-7769	2	SEMICOND DEVICE 81483 353-0400-010 EFF MCN 540	Q31	1	
R	368	RC32GF152K	2	RESISTOR, FXD, 1500 OHMS 10%, 1 W 745-3359-000 EFF MCN 540	R138	1	
R	369	RC07GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1/4 W 745-0764-000 EFF MCN 540	R139	1	
R	370	MM2186	2	TRANSISTOR 04713 352-0551-020 EFF MCN 540	Q54	1	
R	371	RC32GF152K	2	RESISTOR, FXD, 1500 OHMS 10%, 1 W 745-3359-000 EFF MCN 540	R158	1	
R	372	RC07GF223K	2	RESISTOR, FXD, 22,000 OHMS 10%, 1/4 W 745-0797-000 EFF MCN 540	R140	1	
R	373	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000 EFF MCN 540	R159	1	
R	374	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000 EFF MCN 540	R125	1	
R	375	RC07GF102K	2	RESISTOR, FXD, 1000 OHMS 10%, 1/4 W 745-0749-000 EFF MCN 540	R124	1	
R	376	2N956	2	TRANSISTOR 352-0400-010 EFF MCN 540	Q48	1	
R	377	1N4756	2	SEMICOND DEVICE, ZENER DIO, 47 V 5% 353-6481-580 EFF MCN 540	CR49	1	
R	378	2N956	2	TRANSISTOR 352-0400-010 EFF MCN 540	Q29	1	
R	379	1N4003	2	SEMICOND DEVICE 353-6442-030 EFF MCN 540	CR82	1	
R	380	RC32GF152K	2	RESISTOR, FXD, 1500 OHMS 10%, 1 W 745-3359-000 EFF MCN 540	R154	1	
R	381	MM2186	2	TRANSISTOR 04713 352-0551-020 EFF MCN 540	Q52	1	
R	382	RC07GF102K	2	RESISTOR, FXD, 1000 OHMS 10%, 1/4 W 745-0749-000 EFF MCN 540	R120	1	
R	383	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000 EFF MCN 540	R121	1	
R	384	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000 EFF MCN 540	R155	1	
R	385	2N956	2	TRANSISTOR 352-0400-010 EFF MCN 540	Q46	1	
R	386	RC07GF223K	2	RESISTOR, FXD, 22,000 OHMS 10%, 1/4 W 745-0797-000 EFF MCN 540	R134	1	
R	387	1N4756	2	SEMICOND DEVICE, ZENER DIO, 47 V 5% 353-6481-580 EFF MCN 540	CR47	1	
R	388	RC07GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1/4 W 745-0764-000 EFF MCN 540	R133	1	

GROUP ASSEMBLY PARTS LIST

	FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
R	1105 389	RC32GF152K	2	RESISTOR, FXD, 1500 OHMS 10%, 1 W 745-3359-000 EFF MCN 540 R132	1	
	390	761-7491-001	2	TERMINAL BOARD	1	
	391	6009-8A	3	CLIP 91506 139-2336-000	1	
R	391A	F22NCFMA1-26	3	NUT, SELF-LKG, CLINCH, CAD. PL STL, 2-56 72962 333-0837-000	8	
	-392	R4008X3-32CHROMATEDP	3	RIVET, TUBULAR, AL, 0.089 DIA X 3/32 LG SHK 12014 305-0169-000 AP	1	
R	393	761-2956-001	3	CLIP, SPG TENS P	53	
	394	SL354-351DRED	3	TERMINAL 12615 306-2474-040	6	
R	395	SL354-351DORN	3	TERMINAL 12615 306-2474-050	11	
	396	SL354-351DYEL	3	TERMINAL 12615 306-2474-060	2	
	397	SL354-351DVIC	3	TERMINAL 12615 306-2474-090	2	
R	398	SL354-351DBLK	3	TERMINAL 12615 306-2474-020	37	
R	399	SL347-322DWHT	3	TERMINAL 12615 306-1532-000	128	
R	400	SL354-351DWHT	3	TERMINAL 12615 306-2474-010	177	
	401	761-3427-002	3	TERMINAL BOARD P	1	


GLIDE SLOPE EXT MODE 39
PART OF PIA
PART OF PIB
APPROACH ON 17
GLIDE SLOPE ON 45
PART OF PIA
LOC FREQ ON 43
PART OF PIB
HEADING MODE 47
VOR/LOC MODE 46
GS EXT
EXT
EXT MODE
MODE GENERATOR
APR MODE
APR
NAV ON CRS GRD
2Q39
A B APR ARM
LOC FREQ
LOC
LOC FREQ
2CR14 2CR93 2CR15
2Q6
2Q5
LOC ON
2CR89 2CR88
2Q3
2Q1
VOR ONLY
VOR ONLY
HDG
HDG
HDG MODE
NAV ON CRS GRD
2CR22 2CR10
2Q8
2Q2
V/L
HDG LOGIC
HDG ON
CD OFF
B4
HDG V/L
NAV OFF
2Q7
RADIO LOGIC
V/L
NAV CAP
ANN
R/L
B/L
PART OF PIA
HEADING ERROR SYNCHRO C2 14
HEADING ERROR SYNCHRO C1 13
HEADING ERROR SYNCHRO C3 15
PART OF PIB
HEADING ERROR SYNCHRO C' 23
HEADING ERROR SYNCHRO H' 33
HDG Z
30
15
10
C
31.6K
14.7K
10K
3Q27
QUAD REJ 3Q42, 3Q43
HDG MV 240+
120
300
60
150
E1
HEADING
RADIO
RADIO IN
VOR/LOC DEV + LEFT 32
VOR/LOC DEV + RIGHT 22
1Q18 CHOPPER 1Q19
1Q20 1Q21
1Q22 1Q23
RATE LIM ADJ 1Q24 1Q25
LOC FREQ
TRACK MODE
C
L
V
B S ADJ
1CR20 LIM 1CR23
1Q26 CHOPPER 1Q27
1Q28 1Q29
RADIO RATE LIMITER
RADIO RATE
LOC
NAV
PART OF PIA
COURSE DATUM SYNCHRO C2 18
COURSE DATUM SYNCHRO C1 17
COURSE DATUM SYNCHRO C3 19
COURSE DATUM SYNCHRO C' 24
COURSE DATUM SYNCHRO H' 34
PART OF PIB
CD Z
30
15
10
C
31.6K
14.7K
10K
QUAD REJ 1Q13, 1Q14
1Q11 1Q12
CD IN
CD MV 240+
120
300
B3
60
150
COURSE DATUM
RADIO 30
16
8
4
2
2 SEC
1
.5
CD
3.2
RATE GAIN

562R-1 Logic Diagram

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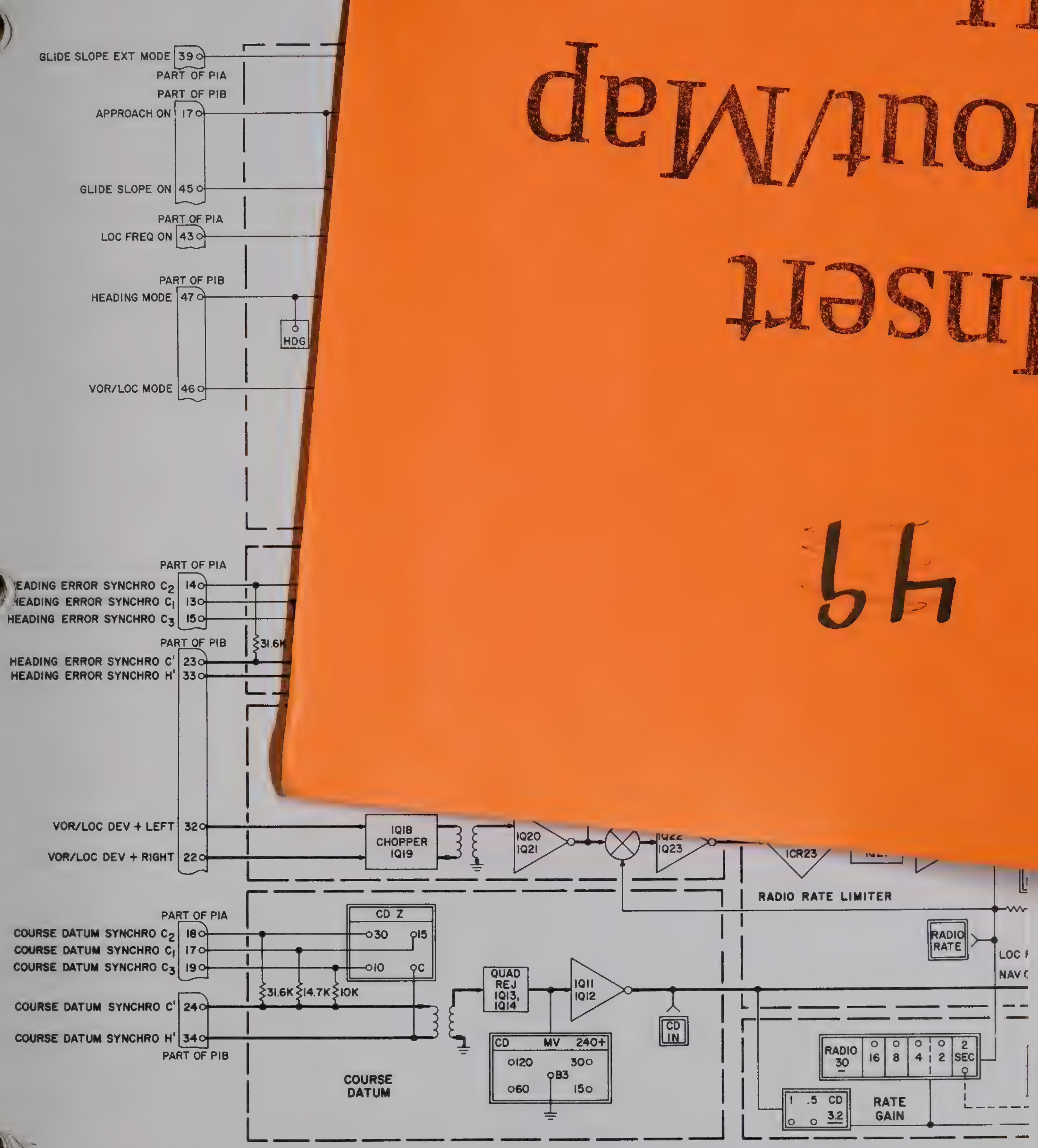
GLIDE SLOPE EXT MODE
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GLIDE SLOPE ON
45
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LOC FREQ ON
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PART OF PIB
HEADING MODE
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HDG
VOR/LOC MODE
46
PART OF PIA
HEADING ERROR SYNCHRO C2
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1Q20 1Q21
1Q22 1Q23
1CR23
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COURSE DATUM SYNCHRO C1
17
COURSE DATUM SYNCHRO C3
19
CD Z
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15
10
C
31.6K
14.7K
10K
COURSE DATUM SYNCHRO C'
24
COURSE DATUM SYNCHRO H'
34
PART OF PIB
QUAD REJ 1Q13, 1Q14
1Q11 1Q12
CD IN
CD MV 240+
120
300
B3
60
150
COURSE DATUM
RADIO RATE
LOC
NAV
RADIO 30
16
8
4
2
2 SEC
1 .5 CD 3.2
RATE GAIN

562R-1 Logic Diagram

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